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THE HEALTH MAGAZINE

PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION

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HYGEIA

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Contributors to This Issue

DR. MILES J. BREUER, Nebraska writer-physician, appears again this month with "Tonics." His previous contribution, "Something I Ate," was widely reprinted. The dangers that lurk in contaminated drinking waters are described by DR. ROBERT A. KILDUFFE, director of laboratories of a large hospital.

From the famed Mary Crane Nursery, Hull-House, Chicago, comes MRS. JANET BURGOON'S contribution. Twelve or more years in hospital social service work has qualified Mrs. Burgoon to write on the question of discipline of the sick child.

CARL D. CLARKE tells the story of a profession little known to the public. He is director of art and photography at the University of Maryland school of medicine.

The women of Albany County, New York, have organized to spread the gospel of prenatal care. DR. HAROLD A. PECK is one of the obstetricians who is assisting them in their campaign. A world traveler and authority on tropical hygiene, DR. ARTHUR TORRANCE is now on his way to Africa. Radio listeners know his weekly broadcasts on tropical travels over the Columbia network. He has contributed to HYGEIA on several occasions.

A popular account of the progress of ophthalmoscopy, the examination of the interior of the eye, will bring to most of us new light on an important medical specialty; DR. JAMES E. LEBENSOHN writes of his own field.

DR. W. W. BAUER, a Wisconsin health officer, in this issue discusses another public health problem that may touch almost any home. DR. B. C. H. HARVEY continues to tell us how involved are our bodies. HELEN POWELL SCHAUFFLER seems to have conquered the difficult problem of preparing an evening meal for the school child.

DR. THURMAN B. RICE is a professor and never a dull one, we wager. He teaches preventive medicine and he preaches the same subject from HYGEIA and other publications, platforms and pulpits.

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SUNLIGHT

An Editorial

THE American people are given to fads. Within the memory of many of us we have passed through a half dozen crazes. Some of these mass movements may be due to advertising, but most of them seem to be amenable to the usual psychologic laws governing mob action. The interest is not created by advertising but may well be maintained and expanded by advertising after it has developed.

In the matter of weight American women have passed alternately through periods of slenderization and body building which have been simultaneously the despair of the costumer and of the manufacturers of foods. There was a time when most of the men of the country were utilizing various types of springs, Indian clubs, dumbbells and other devices to build big muscles, because it was thought that big muscles were synonymous with health. The vogue of the agitator or shaker or automatic exercising device has not yet ended, but already the Council on Physical Therapy of the American Medical Association has issued a report deprecating the use of such devices generally and pointing out the desirability of limiting their use for specific purposes in individual cases.

PERHAPS the most striking demonstration of mass interest in a health device has been the promulgation of apparatus for providing artificial sunlight. Again and again it has been emphasized that the ultraviolet rays of the sun have the specific power to create vitamin D and that beyond this effect they seem to be of little service in promoting the health and growth of the human being. Vitamin D may be of special importance for the mobilization of calcium, and calcium metabolism is related to the course of various disorders. It is, however, difficult for the average man to know whether or not his calcium metabolism is progressing properly and whether or not he needs extra ultraviolet rays, vitamin D or calcium.

It has been known for centuries that sunlight is essential to maximum health. Ancient man lived largely in the out-of-doors, and until window glass was introduced into England about the sixteenth century, rickets was not a great problem among the Caucasian people. Since that time, rickets has been prevalent and it is quite likely that the newer knowledge of ultraviolet rays will help to control and overcome the condition. This is no warrant, however, for overexposure of adults to artificial sources of ultraviolet rays in the home nor is it any indication that the amount of sunlight available in most communities is not sufficient for most practical purposes.

OF COURSE, there is evidence that in such large cities as Chicago, Pittsburgh and New York, adequate sunlight comes through the clouds of smoke only during the summer months and then only for a few hours each day. By adequate sunlight is meant sufficient sunlight to be of service in the prevention of rickets. By the time the human being reaches 21 years of age, he is not concerned much with the question of bone growth, for it is quite probable that he can obtain all the vitamin D he needs through proper diet. This is particularly the case, since numerous foods are now available supplied with vitamin D by the use of irradiation.

There seems to be far more to the value of sunlight in the open air than can be accomplished by the use of an artificial source of ultraviolet in the home. The outdoor breeze, the exercise, the fresh air, the stimulation of pleasant companionship on the golf course or in the walk through country lanes are factors which no artificial source of ultraviolet can even suggest and which certainly cannot be compensated for by any other means. The summer offers exceptional opportunities for getting everything that the outdoor sunlight can provide. The opportunity should not be neglected by the health seeker. Let him get not only a sun tan but the relaxation, the joyousness and the inspiration that come with green fields, the hills and the blue skies and sun above.

Tonics

by Miles J. Breuer

"I know you don't give tonics, Doctor, but—"

"DOCTOR, I'm all run down. You'll have to give me a tonic." How often the practicing physician hears that request! Some persons firmly believe that the doctor has at his disposal a mysterious substance that in the form of a pill or out of a bottle will make a weak man strong and transform a rundown human system into one that is healthy and alert. This magic substance is supposed to be a tonic. If you are weak or tired or lack energy, all you do is swallow the tonic, and presto! you are a new man.

Of course, there are other persons who, having heard lectures and read syndicated articles in the press, have sensed this lack of tonics among the prescriptions of the modern medical man.

"I know you don't give tonics," they say to me, in a tone of voice that seems to imply that I have this wonderful, life-giving substance hidden away somewhere, but that, in concerted plot with the rest of the medical men who are assuming a modern attitude, I am deliberately withholding it from them.

However, the searchlight of modern science is compelling us to cease amusing ourselves with fairy-tale fancies and to stand up and face the unvarnished truth. It has taken the romance out of a great many old beliefs about sickness and treatment. Among other things, the tonic idea has been knocked so high that it hasn't come down yet.

The modern physician, when he hears the word "tonic," understands it to mean a substance that will stimulate the contraction of a muscle; and the meaning might possibly be stretched to cover the stimulation of glands to secrete.

This meaning of "tonic" depends on the original Latin significance, which is the degree of stretch, or "tonus." A tonic increases the stretch or tension of muscles and possibly also the flow of secretion from a gland. When a muscle is weak and flabby, a tonic will stimulate its contraction, so that while the effect of that particular dose lasts, the muscle will be stretched tighter. That means that it will be harder and that it will do more work, which is equivalent to the popular conception of having more strength.

In other words, a tonic acts just like a whip on a tired horse. It drives to greater effort and greater expenditure of energy an organism that is hardly capable of it. Whether the whip is beneficial or not will depend on whether the horse is tired or sick or merely lazy. One can readily see that while a whip may be a wholesome treatment for a lazy horse, it is disastrous to a tired or sick one.

Our own physical sensations are not critically enough developed so that we can distinguish with certainty between laziness and sickness. If we could always be sure that our disinclination was only laziness, the drugs that are placed in the tonic class might be an excellent thing. But no one can be sure from the way one feels whether the fatigue and lassitude are the result of indolence or hot weather on the one hand, or whether they result from the indisposition that accompanies fever or anemia or the debility from diabetes or tuberculosis. If our tired and lazy feeling is the result of Nature's efforts to let us know that our strength is running low, it is a mistake to whip ourselves with a tonic; that merely makes further inroads upon our already limited resources, and brings us still nearer to collapse.

It may be true that a tonic will make a person feel better, even though he is ill and has but

A tonic acts just like a whip to a tired horse.

little real strength left. When a person has expended strenuous effort or lost strength from severe illness Nature does not wait until the last bit of strength is gone before causing him to feel exhaustion. She knows better than to depend on man's careless and absent-minded brain for the conservation of life. Therefore, she gives him a sharp warning by means of fatigue long before exhaustion is complete. Even when he feels thoroughly exhausted, he still has a fair amount of reserve left. Nature keeps this reserve because she is careful and thrifty; she avoids going too near the danger line. "Safety first" is her motto; and she warns our bodies to rest and undergo natural repair before it is too late.

Now the person who takes a tonic at that stage stifles Nature's warning voice, depletes his reserve stores of strength and burns out his battery. Of course he feels better for the time being; but he feels better at the expense of undermining the foundations of his life and health. Nature's warnings call for rest; the real cure is food and sleep, and no tonic will take the place of these.

There is a further reason why it is a dangerous sport to take tonics when the rundown feeling appears. The tired feeling, disinclination to work, constant fatigue and lassitude may mean merely that a person has been working too hard and needs a rest. If that is the only cause, a few good nights' sleep and a few square meals will put him in shape so that he will feel fit again, and full of energy and vigor. If this kind of treatment does not get rid of the feeling, the conclusion is inevitable that it must have some more serious underlying cause; that it is the symptom of some hidden or approaching disease. A rundown feeling is not due to the approach of spring. During springtime a person in good health will feel gayer and sprightlier than ever. The following are some of the things that may be at the bottom of the rundown feeling:

1. The beginning of an infectious disease, such as influenza, typhoid fever or appendicitis.
2. The presence of a chronic infectious disease, such as tuberculosis, malaria or rheumatic fever.
3. The presence of a chronic debilitating disease, such as diabetes, Bright's disease and heart disease.
4. Anemia, due to loss or destruction of blood, ulcer of the stomach or profuse menstruation.
5. Malignant disease, such as cancer.
6. Deficiency disease, such as the lack of some necessary food factor.
7. Glandular disease, such as deficiency of thyroid or adrenal secretion.

The use of tonics in cases in which the rundown feeling has some such cause as the foregoing will merely hasten the fatal result. The tonics have no effect whatever in removing the cause, contribute nothing to curing the fundamental disease, and they burn up the patient's supply of reserve energy, break down his tissues and lower his resistance. He will die sooner than he would have died without any tonics.

A rundown feeling is not due to the approach of spring.

Therefore, before walking into a drug store and asking for a tonic, before deciding to act on the enthusiastic newspaper advertising about the astounding virtues of the latest "Bunkola," think it over. There is a possibility that the rundown feeling may have some serious foundation. If it has, the tonic will do no good and may do serious harm. If it has not serious foundation, you do not need a tonic.

There are two ways of finding out whether the condition is a serious one. Take the tonic and see if you get worse and die. In that case, your condition was serious and the

tonic was the wrong method. The second choice is to see a competent physician as soon as possible and have him examine you carefully. It may be that the doctor will tell you that you will have to go to bed earlier nights; in which case your money will have been well spent. If he finds that you need an operation or insulin treatment or have high blood pressure, you will also be lucky; because tonics do not cure these things.

There remains a certain class of medicines which the older physicians called alteratives and which still have some value in modern treatment, though, I fear, a steadily decreasing one. These substances perhaps are of some assistance in helping a debilitated person gain strength and flesh. But they can only help if they are used in conjunction with rest and food. There is no medicine, no treatment, no wonderful ray, no exotic herb, no sort of gland juggling that will add strength and build up flesh. And, in the vast majority of cases, rest and food are quite sufficient and need no assistance. Instead of wasting his money on tonics, the patient would be better off if he got some extra oranges and beefsteak.

The doctor's main job in most cases is to find out whether or not there are inflamed, malignant or other pernicious conditions existing as an obstacle to the ordinary smooth course of natural repair and recovery. If they are present, it is his job to remove them. But not even the alteratives that are sanctified by the Pharmacopeia will cure cancer or Bright's disease. If such obstacles exist and if the doctor can overcome them, it will be found that Nature has a wonderful way of fixing things up all by herself.

For that reason, I often tell people that my favorite tonic is a beefsteak or a glass of milk. If your doctor does give you a tonic, feeling that no serious condition exists, remember that the tonic will only help food and rest to build you up. It can never take their place.

Physical Tests for Pilots

FLYING is more than an ordinary activity. Therefore it calls for a physical and neurologic make-up in the pilot more exacting than other pursuits if he is to be successful. In *The Journal* of the American Medical Association, Dr. Harold J. Cooper, assistant medical director of the aeronautics branch, U. S. Department of Commerce, describes the methods by which would-be aviators are adjudged physically fit and the results of applying strict medical standards.

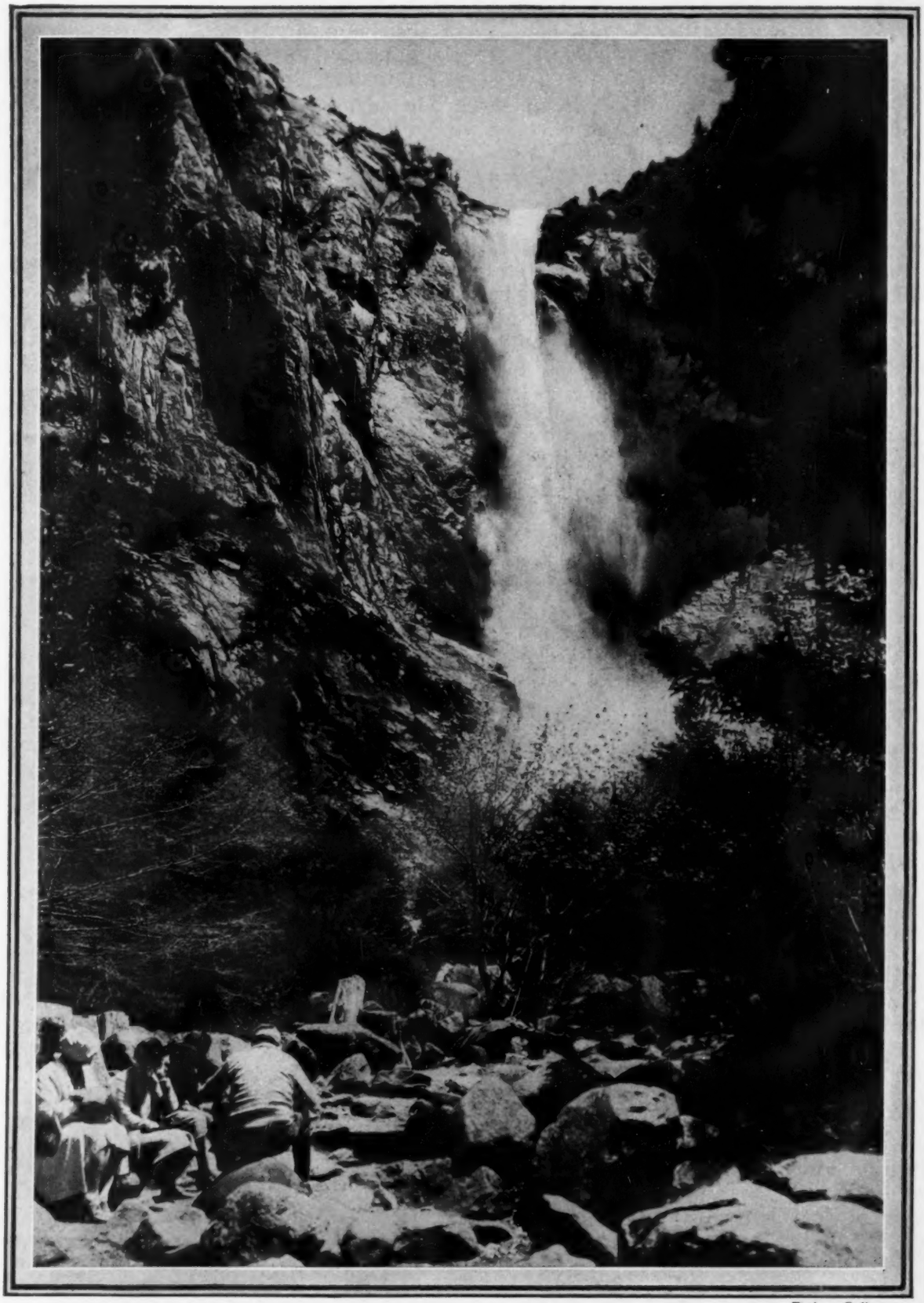
A complete physical examination is given to every applicant. In particular, the eyes are examined for keenness of vision, perception of color and form and ability to judge distance. The ears are tested for hearing, for signs of disease and for equilibrium.

Then the prospective flyer submits to a searching neurologic examination. His reflexes are tested; tremors or any other nervous disturbances are noted. In addition the examiner questions him at length in order to get an impression of his temperament. He makes a special effort to learn what the applicant's reaction has been in situations of stress in order to throw light on his probable reactions in emergencies of flying.

Many of the young persons who apply for license to fly have never been to a doctor before and it is likely that they have never before received such a thorough combing for defects, says Dr. Cooper. When it is stated that the department expected 50,000 new applicants during the fiscal year 1929-1930, it is obvious that the regulation of air commerce has a health aspect in addition to its licensing of flyers on technical knowledge.

There have been innumerable cases in which the young men and women were wearing improper glasses or were unaware that they had eye defects. Many of these later appeared with their defects corrected and were licensed. Albumin in the urine has been cleared up with treatment of infected sinuses and teeth and the removal of infected tonsils. The fact that hernia is disqualifying in passenger-carrying pilots has led to surgical repair of many defects of this type.

The close attention given by commercial air lines to their pilots is mentioned by Dr. Cooper. A number of these lines now subject their pilots to monthly physical examinations. If the examinations show minor ailments or fatigue the pilot is relieved from duty for a few days until his efficiency returns. The public is entitled, in Dr. Cooper's opinion, to an assurance in its patronage of air transportation that both plane and pilot are airworthy.



Ewing Galloway

Better Safe than Sorry

NO MATTER how tempting a water supply may appear to be, it is well to remember that it is better to be safe than to be sorry. Water that looks pure may not be so pure.

The Old Oaken Bucket

May Be Full of Germs

By Robert A. Kilduffe

POETS and sanitarians alike have raved over the old oaken bucket that hangs by the well —but for very different reasons—for sanitarians know that, without proper precautions, it may be a potent factor in the spread of such diseases as cholera, dysentery and typhoid fever.

For this reason the cross-country automobilist, the hiker and the camper are warned that care must be exercised in the selection of sources of drinking water. Fortunately, however, if water is recognized as a source and possible conveyer of disease, the reasons therefor and the precautions necessary to avoid catastrophe are also understood.

H. Armstrong Roberts

Campers should always beware of water from uncontrolled sources.

While not classed as a food, for it has little or no value as a source of energy, water nevertheless is the principal substance entering or leaving the body, for nearly everything absorbed or excreted is mainly in solution.

Water comprises about 70 per cent of the body weight and as water loss occurs, not only by way of the kidneys but also through various other secretions as through the skin, lungs and intestinal tract, the average healthy adult must make up this continual loss by the daily intake of from 2 to 2½ quarts. An ample supply of good drinking water is obviously essential, therefore, to comfort and existence.

Whether a water is good, bad or indifferent depends on several factors. A polluted water is one whose color, odor or taste is impaired. It is not thereby necessarily a cause of disease. A contaminated water is one which, by reason of the presence of human or animal wastes or of poisonous chemical substances, is not only unfit for consumption but a potential cause of disease.

It is not an uncommon idea that if a water looks good, tastes good and is without odor it is good. As a matter of fact, marked and dangerous bacterial contamination of water may be present without obvious evidence and is suspected or detected only by examination of the water itself and also—which is of equal and sometimes even greater importance—by the examination of its sources.

Water has a common source, the aqueous vapor which condenses into rain or snow, but because some of it collects on the surface, some follows the surface slope to join streams and some penetrates deeply into the ground below, water supplies are classified as rain, surface waters and ground waters. Surface waters comprise lakes and streams, while wells are ground waters.

While rain water, because it is first vaporized and then condensed, is really distilled water, it may be a dangerous source of drinking supply when improperly collected or stored because of the opportunity afforded for the entrance and multiplication of disease-producing bacteria.

The innumerable and obvious opportunities for the contamination of surface waters, which are the usual sources of community supplies, make methods for purification essential. While there are grounds for the popular belief that running water purifies itself, the two essential factors for this self-purification are aeration and the distance traveled since the contamination.

A rippling brook will absorb more oxygen than a sluggish stream, but even the most turbulent brook must travel some distance from the source of contamination before it can destroy by oxidation the bacteria that have entered or been washed into it.

Wells are universally regarded as safe drinking sources because the water drawn from them has reached the depths by soil filtration. Unless, however, a well is properly protected at the top and its walls free from cracks for some distance below the surface, there is nothing to prevent frequent or even continual contamination from above—and so the old oaken bucket may be full of disease-producing bacteria.

The famous case of the Broad Street pump is an illustration of just such an occurrence and is one of the earliest, if not the first, instance of the incrimination of water as a carrier of disease.

The majority of the dwellers within St. James' parish in London in 1854 obtained their drinking water from the Broad Street pump and loudly maintained its superior excellence.

It happened that at this time cholera was prevalent in London, but in no other district were so many affected as in St. James' parish where, within seventeen weeks, there were 700 deaths from cholera. This seemed significant.

It soon became apparent that there were peculiarities in the distribution of this virulent epidemic. The almshouse, for example, was surrounded by houses in which the disease was rampant, but only 5 of its 500 inmates died. Among those working in a brewery near the pump not a single case occurred, while there were 18 deaths among the employees of a cartridge factory in the same street.

Similar instances could be multiplied, all pointing to the significant fact that whenever the disease broke out it was found among those who drank from the pump, while wherever individuals or groups escaped, they were found to use some other source of drinking water.

The brewery and the almshouse, for example, had their own wells, while the cartridge factory filled tubs with drinking water from the pump.

More striking still were numerous individual cases, as that of the lady who had moved from the parish some months before but to whom, because she preferred it, a bottle of the water from the pump was sent daily by carrier. Not only she but her niece, who also drank of it, died of cholera, while others in the house who used another supply remained well.

The mystery was finally solved by the discovery that in a nearby house in which some time before there had been an undiscovered

Ewing Galloway

No water at all, of course, is a step worse than water of doubtful quality. A warning sign in Death Valley, California.

Ewing Galloway

Several states protect motor tourists by labeling places that have safe water supplies.

case of cholera, there was a cesspool which with its drains was badly decayed and leakage from which was clearly traced to the well drawn upon by the Broad Street pump.

An equally famous illustration of the spread of disease by contaminated surface water was the Plymouth typhoid epidemic.

In January, 1885, a resident of Plymouth, Pa., at that time a mining town of about 8,000 inhabitants, returned from spending Christmas in Philadelphia and soon after developed typhoid fever.

As he lived some distance from the town proper in a house with somewhat primitive sanitary arrangements and situated near the stream used as a source of water supply by the town, the excreta were thrown either into the frozen creek or upon its bank. In March there was a sudden thaw and the creek, reenforced by seepage from the banks, flowed rapidly into four small reservoirs serving as the town supply.

Within three weeks typhoid fever appeared in Plymouth spreading rapidly until there were more than a thousand cases and more than a hundred deaths, all among those using the town water supply.

To cap the climax, on one side of one street there were cases in every house, while on the other side where only well water was used, there was not a single case.

Bacteriologic methods by this time had advanced to a point permitting absolute proof of the rôle of the water in the production and spread of this outbreak. Public health officials now carefully examine all city water supplies.

The detection of water contamination is an interesting and at times a complicated problem, not the least important part of which is the sanitary survey, for laboratory and especially bacteriologic investigations only indicate the condition of the water at the time of the examination. They seldom read the past and can never guarantee the future.

While laboratory methods can often tell when contamination has occurred, the sanitary survey can foretell if it is likely to happen. It is highly important, therefore, if the safety of a well is to be determined, for example, to have an expert examine the well itself first of all and determine if it is properly located and so constructed as to be safeguarded against avoidable contamination.

Laboratory examination of water is of two kinds, chemical and bacteriologic, one supplementing the other, the aim of both being the same: to determine whether the water is safe for human consumption.

Chemical methods consider not only the physical characteristics of water such as odor, taste and hardness but also consider what is dissolved

in the water in terms of parts per hundred thousand of water.

The more important of these substances from the sanitary standpoint are chlorides, nitrites, nitrates and those substances dealing with organic matter. A high ammonia content suggests proximity to a source of pollution, while a high nitrite content—as also some ammonia or nitrites in the presence of nitrates—evidences incomplete oxidation of nitrogenous waste entering the water.

In general, the chemical analysis of water tells much of its past history while the bacteriologic examination suggests its present condition.

H. Armstrong Roberts

One can always boil the water. The flat taste can be removed by shaking it in a half filled container before it is used for drinking purposes.

While great importance was formerly attached in the bacteriologic examination to the total number of bacteria in a known volume of water (one cubic centimeter, or about fifteen drops), modern methods are more concerned with the kind of bacteria present and are directed toward the detection of organisms of the *Bacillus coli* group because these are normally present in the intestinal canal.

Their presence is established by planting the water in suitable culture mediums designed to reveal the characteristic biochemical activities of the colon group of bacteria.

These organisms vigorously attack and split up certain sugars, such as glucose and lactose, with the formation of acid and gas. When planted in a fluid medium containing these sugars and in a receptacle so designed as to collect the gas formed in a closed arm, the colon group evidences its presence by the amount of gas produced and also by the acid formed during its production. The sugars are also incorporated in a solid medium containing a chemical indicator that changes its color in the presence of acid. Colon bacteria on such a medium produce growth differing in appearance from that of other bacteria which do not attack the sugars. The presence of definite numbers of colon bacilli is evidence of sewage contamination and suffices to condemn the water as unfit for human use without proper precautions.

The developments of modern methods of travel have complicated the situation because they lead to the use of water from uncontrolled sources.

During the World War, it was a standing order that for the A. E. F. all waters were considered unsafe unless shown to be otherwise by laboratory examination, and as this was not always feasible because of constant troop movements, all waters had to be made safe for use.

The two simplest and most effective methods for the purification of contaminated water are either boiling for twenty minutes or the destruction of bacteria by the addition of substances suitable for the purpose and harmless to human beings.

Boiling is effectual but sometimes, because of the loss of the air contained in the water, leads to a flat taste. This can be easily remedied by shaking the cooled water in a half-filled container for a few minutes, oxygen being thus reabsorbed from the air.

The most widely used chemical, and the one relied on in the A. E. F. as well as in the protection of community supplies throughout the United States, is chlorine gas.

This may be introduced into the water as a gas or in the form of calcium hypochlorite (chlorinated lime), which is added to the water in amounts sufficient to provide 0.25 to 1 part "available chlorine" per million parts of water. This approximates from 2 to 8 pounds of chlorine gas or from 6 to 24 pounds of chlorinated lime per million gallons.

For emergency use by tourists and campers the method is applied by preparing a solution containing one teaspoonful of chlorinated lime to one pint of water. When the insoluble portion has settled the clear fluid is removed and added to water in the proportion of one teaspoonful to ten gallons, thirty-six drops to one gallon, or nine drops to one quart.

After fifteen minutes the water is safe for use and will not be found to taste markedly of chlorine. Tablets have been prepared for the purification of water but they must be fresh to be effective.

Daytime naps can be made a game. The mother can pretend the child is stepping into a sleeping car.

The Sick Child at Home

By Janet Burgoon

SINCE much of the success of treatment during illness in children depends on their cooperation, should not more emphasis be put on gaining it?

A prominent Chicago pediatrician says, "The habit of bed rest should be established with a child's first illness. Should a child have a slight cold with a rise in temperature, mothers will do well to insist on bed care. It is important for two reasons. The condition requires it, and the child learns at once to associate rest with physical discomfort. He will learn to accept bed rest without antagonism should a more serious condition require it for longer periods." However, all children should be reckoned with as mentally and socially normal beings who are awake to life about them and eager to live fully in spite of illness or convalescence.

Hospital disciplined complete bed rest is quite a different matter from home bed rest. The hospital has equipment for the child's comfort. A definite program is carefully followed each day and a hospital patient learns to accept it. Could not a similar plan be worked out in the home? A day's routine would, of course, be influenced by the mother's other responsibilities. If she will remember that rest periods precede feeding times, sleep reasonably follows feeding times, and play must be planned for, she can work out the details to her convenience.

She will want to understand that rest periods can be quiet play, preferably in a reclining position, but sleep requires that all stimulation interfering with complete relaxation be removed from the room. Taking the colorful playthings out of the room and shutting out the excitement of the street by lowering the shades will be included in this procedure.

These daytime sleeping periods need not be made a disagreeable necessity. They can be a pleasurable part of the day's program, if mothers can learn to assume a playful attitude, inventing ways of making a game of it. Playing that the child is stepping into the sleeping car is one way.

Few beds in the ordinary home have head rests. Sitting propped up on pillows for long periods of time is not comfortable. It is helpful to place a piece of canvas the width of the bed and about one half its length over the mattress and under the lower sheet. Attach two strong bands at either end of the width of the canvas and tie them to the high points at the head of the bed frame. Then pin the lower sheet over it smoothly. Fewer pillows are necessary and the propping up process is simplified.

Bed tables are seldom available at home. One can easily be made, however, out of an orange crate. Cut the sides of the crate down to a satis-

factory height, put an additional board on the top to reenforce it, and cover the whole with oil cloth so that it will be smooth and easy to keep clean.

Lack of something to do causes more discontent and fussing than anything else. Looking, alone, can never satisfy a youngster. He is out to conquer his surroundings. Playthings for his contentment must be those he can get close to and do something with.

Playthings while in bed might include for the younger child a group of dolls that will help her to create make-believe families. Small colorful building blocks make castles. Magnetic boards make magic playmates. Children must have opportunity to learn through pretending, and playthings are the pegs on which they hang their imaginings.

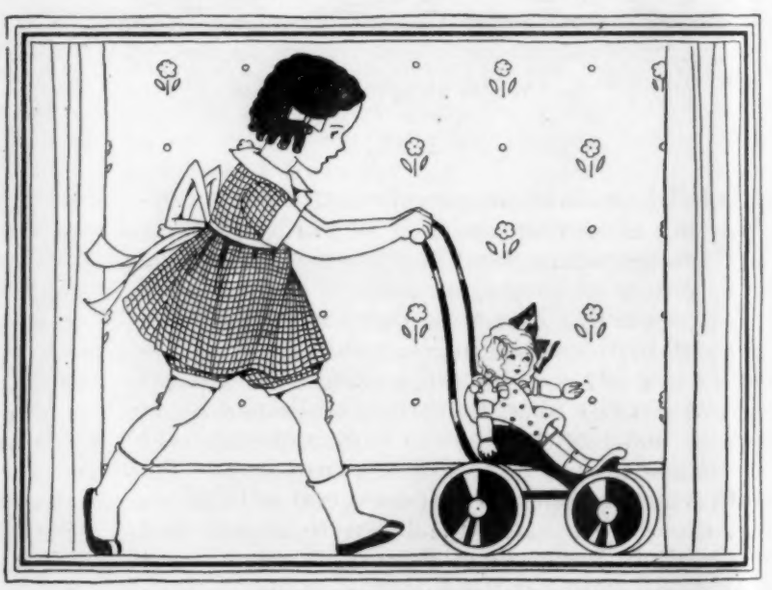
Having a child visitor for a time can shorten the day for the child, and a game between patient and visitor can be chosen by the mother that will be within the patient's capacity for emotional stimulation. If real companionship is inadvisable, pinning large, clearly drawn or painted pictures on a screen near the bed will give the child imaginary playmates and he will make up his own stories and games. Changing the pictures at regular intervals will help to bring new life into the room.

For simple coordination, stringing large colored beads or working out designs on a large peg board will add color experience and will also keep the child pleasantly occupied by himself, without tiring. Young children use the larger toys best. They have not learned finer coordination and tire easily when too much nervous control is required. Simple spool knitting for a horse rein, which will be used later, and simple yarn knitting and weaving are possible in bed for short periods. In choosing purposeful occupations. it is well to remember that a child's interest span is short. He enjoys the accomplishment rather than the process. Greatest satisfaction comes with the job that shows results quickly. Never treat lightly anything a youngster has struggled to make. The finished product should be given an important place, if he thinks it deserves it.

The older child confined to bed can keep in touch with his friends by writing letters with a small simplex typewriter or with a rubber stamp set. They are light in weight and easy to handle. Then, too, many instructive books are available in the public library which give help in the making of interesting and useful articles from cardboard, yarn, leather and raffia.

An older boy will enjoy playing with a magnetic fishpond or with baseball and football games that are worked out on paper. These games need not be too stimulating. If feet cannot run and arms catch, mind's eyes can imagine and give some return in fun.

Reading is profitable. Young children enjoy simple jingles and poetry. The rhythm is restful in poems of short stanzas in which there is repetition of words or of action. In prose the most satisfying stories are those concerned with things familiar to the child. Stories with little description or explanation but plenty of definite dramatic action are especially good. Children like stories showing that good prospers and bad is punished. Older children may read stories of their own choosing if they are not too stimulating. Books that are illustrated are usually preferred. Very little children who are not ready for words can get fun from picture books. Cardboard covered books are easier to handle in bed. The daily comic sheets pasted to cardboard make happy companions for the child who cannot manage the newspaper but who is eager to keep in touch with the antics of his favorite comic sheet friend. Radio music helps if it is carefully chosen. Victrola records of simple melodies, with words that are within the child's comprehension, make good friends during confinement. Tapping bells or playing on a triangle does not require much energy and youngsters enjoy the sensation of making musical sounds.

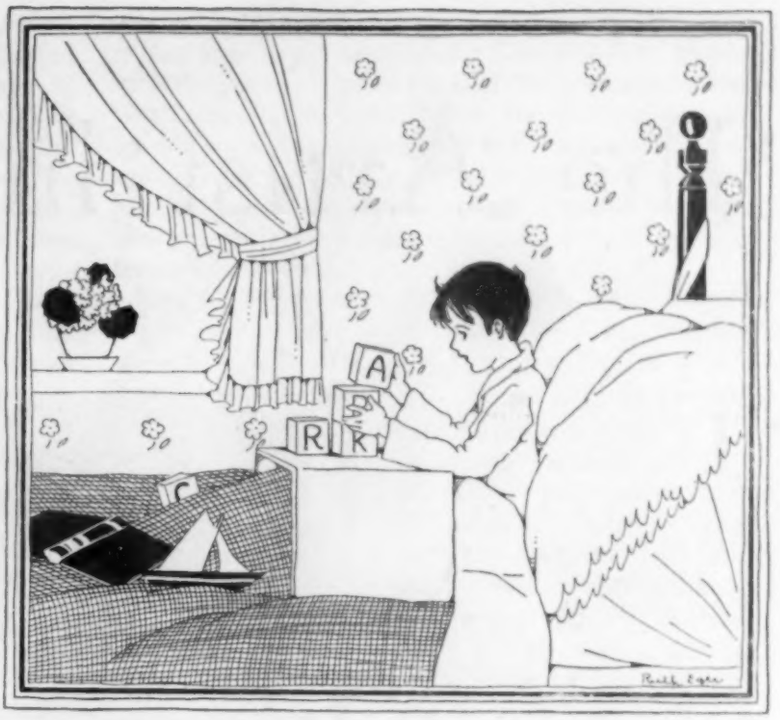


For convalescence, light weight push and pull toys are excellent. A doll carriage or small wagon is recommended.

For active play there are many games to choose from but these should be undertaken during convalescence and only with the doctor's consent. Light weight push and pull toys, like a light weight doll carriage or a small wagon, are possible for the younger child. A carpet sweeper or a small broom will give some exercise to the leg and arm muscles and will add the satisfaction of doing something serviceable for

the family, which all children enjoy. Wooden lock train blocks or trains with wheels can be utilized without overdoing. A board swing hung between doors in the house can be joyous for rhythm experience and leg exercise and need not be harmful when the game is going on where the mother can see the first signs of weariness. Drawing with a wet sponge on a large blackboard is great fun and uses arm muscle power that need not be too taxing. Sand boxes with sieves and molds and a cash register can make storekeepers of the little patients and can keep them pleasantly occupied for long periods before they tire.

Older children will want throwing games that require skill to win. Light weight bowling games or ring toss games with rings made of rubber or rope can be used indoors or outdoors. Games of this type can be made at home.



A bed table can be made from an orange crate.

Spring shoes may take the place of roller skates or ice skates but should be used only with the doctor's permission. The shoes do all the work, and the child has the fun of bouncing.

For group play, table croquet or ping pong is possible, provided other members of the family are ready to chase after and pick up the balls that miss the table. This type of play will bring the handicapped youngster into competitive play with the family.

Small Chair and Desk Desirable

There are periods when convalescent children who are up and about need some quiet interest. It seems indispensable that a child have a chair suited to his size, one that he can get into and out of without help when he is tired rather than let the mother learn of his weariness by his irritability. A table or desk is helpful because it seems wise not to encourage floor play with the possibility of uncomfortable drafts from opened doors.

Young children can sit at tables and draw with large jumbo crayons or paint with long handled paint brushes and bottled water colors. This makes creating forms possible. Simple puzzles of not more than four or five pieces can be managed happily by young children. Older children will enjoy more complex puzzles. These, too, can be made at home out of pictures pasted to cardboard.

Simple assembling toys, allowing for construction experience in automobiles, boats or airplanes, are indispensable to the growing boy. There are meccano and erector sets and small planes of different patterns to be built up and arranged as the boy's fancy takes him. Stamp collections can be started by children in their sixth or seventh years. Any scrap book collection should be encouraged. Games of mystery and magic, which can be obtained from library books or from store game sets, are fine for the child who through prolonged illness is beginning to feel inadequate. Mystifying his parents gives his ego a tremendous boost.

Globes help the older child with travel games. Map puzzles bring geography lessons home pleasantly. Card games of authors, flowers and birds are always fun for the older child. The electric questioner allows the youngster to test his own knowledge of history, geography, nature and current events.

Pets are Stimulating

Owning a pet—a dog or cat or even a goldfish—gives a new interest to the child confined to his home. Watching a growing plant is fun for him, too.

Happy responses from children, sick or well, depend in a large measure on the attitude of the parents. A child occupied with a well balanced diet of play-work is a contented child. For the mother to assume a playful attitude, to be not too obviously in authority, and to share ideas and ideals makes for an understanding that is indispensable through illness and through good health.

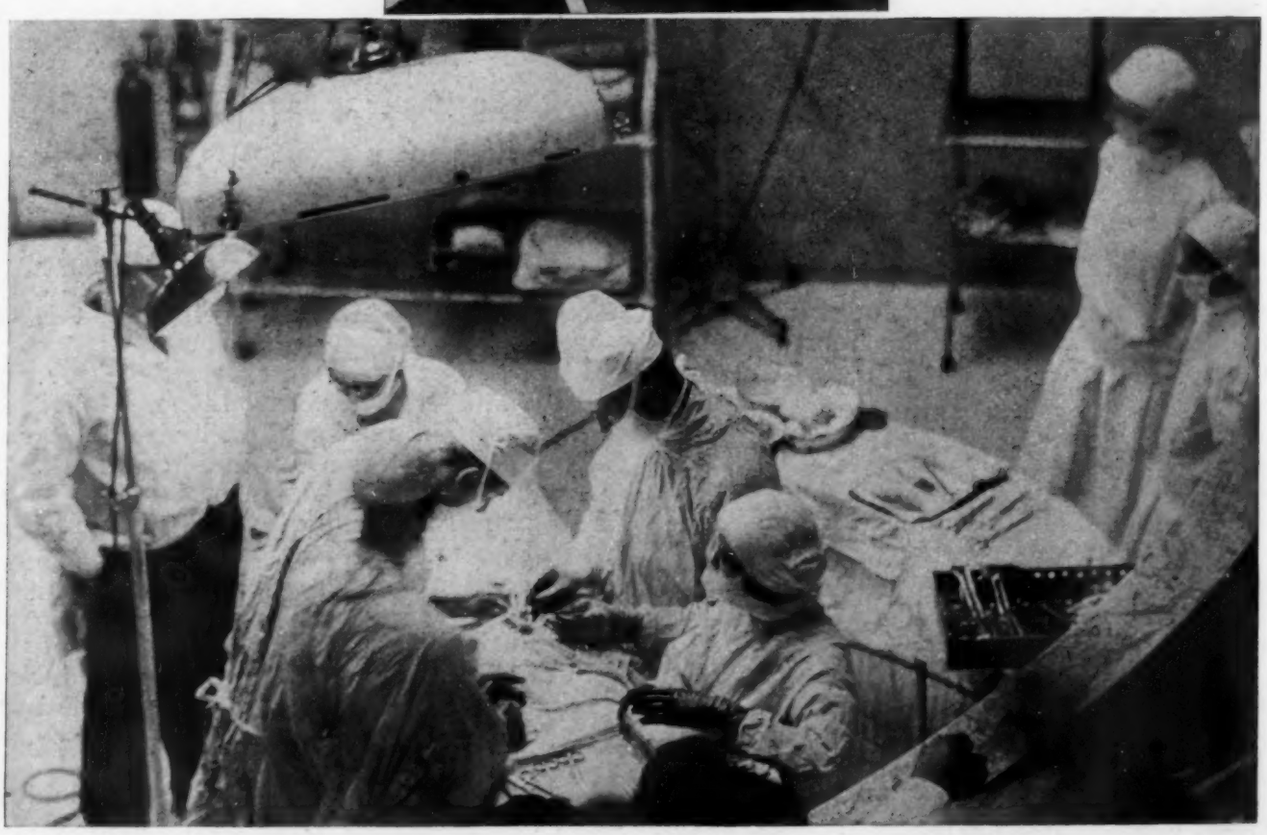
Through illness and convalescence, as in health, a program for the day should include periods for the child to be alone, periods for companionship of his own age, and, of course, happy contacts with the rest of his family. No child will resist cooperation when it is built on such understanding. The main emphasis must be made during the early formative period.

The Artist in Medicine

By Carl D. Clarke

THE artist has now taken a definite and important place in medicine. Today he stands shoulder to shoulder with the surgeon at the operating table. He is with a skilled practitioner at the bedside. His pencil and brush record what he sees. That drawing made at the operating table or at the bedside is printed in medical books and magazines. These books and magazines travel the world over. A drawing made in Baltimore illustrating a new and better way of performing a surgical operation can be studied by physicians at Cape Town, South Africa. Possibly that drawing will be the means of saving a life in Cape Town and hundreds of lives the world over.

From the beginning of time nearly every branch of art including drawing, painting, etching, engraving and sculpture, to say nothing of the comparatively new art of photography, has been lectured on and written about in numberless volumes. But medical illustration has been a red-headed stepchild; it has not had its place in the sun.



The artist stands shoulder to shoulder with the surgeon. At the top, a medical sculptor at work.

Nearly all of us have at one time or another, with mingled interest and bashfulness, opened a sinister volume treating on the workings of our insides. Few of us ever gave a thought to the workmanship of the artist who made the pictures in these volumes. We were so engrossed in the horrors of the disease or anatomy displayed that the thought of how the pictures were made never entered our minds.

I remember well the time when I, as a youngster, visited the office of the family physician. Here I was informed in a professional manner by a prim, white-uniformed nurse that the doctor was busy and I would have to wait. Finally, after waiting some time, I daringly crossed the room and removed from the spacious shelves of the doctor's private library a volume at random. The particular book dealt with diseases of the skin and in it I saw a picture of a man with horrible skin lesions produced by smallpox. Growing bolder, I read farther and learned that many of these skin conditions were caused by germs, tiny microbes some of them a thousand times smaller than a point of a pin. It made me feel squeamish to think that possibly some of these invisible but living organisms might be on the very pages of that book. I imagined them by the millions floating in the air of the doctor's office.

Prof. Max Brödel, director of art as applied to medicine, Johns Hopkins.

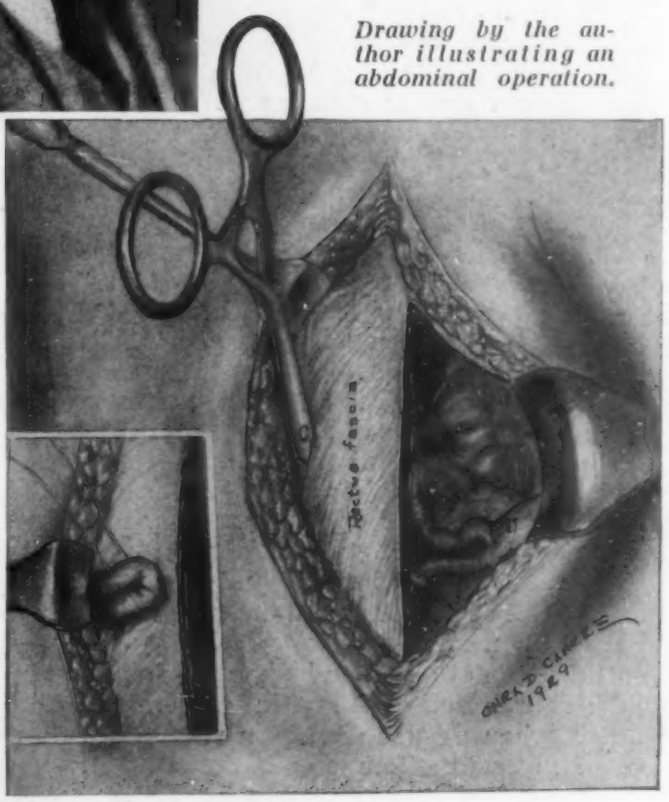
As I turned each page, viewing one horrible picture after another of faces twisted with pain or eyes staring in death, I would have been shocked to think that my life's work could be the making of such pictures, that every day I would see in reality such sights, that I would have to touch cancers and sores, and that my hands, at times, would reek with germs of tuberculosis, typhoid and malaria, germs I had so feared.

An ill-smelling, gangrenous piece of intestine can be as interesting, if not more so, than a sweet scented flower. As Prof. Max Brödel, the father of modern medical illustration, said as he held in his hand a half-decayed gallbladder, "Believe me, sir, there is nothing that is not beautiful about the human body."

To the untrained eye and sensitive nose that gallbladder was offensive, but to the trained eye and knowing brain it was exceptionally interesting and even beautiful. The delicate shades of blues, greens, yellows and their combinations were equally as beautiful as the same shades of coloring on a delicately formed flower and much more interesting to one who knew the history of the gallbladder and not the history of the flower. It is with such enthusiasm that medical illustrators work.

Before written or spoken words were used to teach new and better things to man, pictures were man's first teacher. A drawing on a tree, a rock or sand was the method by which ideas were communicated from one man to another. This method has continued, growing in popularity. A doctor, when opening a book, new or old, first turns to the illustrations, as does the layman; the picture tells him best.

The scientific art of medical book illustration—an art in which accuracy and technical detail are absolutely essential, modeling to the extent that the third dimension is shown with stereoscopic clearness—belongs in a class of its own. The picture must tell the story without a climax. It is a statement of facts as they are, with only a history of the case in writing to describe the development of the disease that the picture por-



Drawing by the author illustrating an abdominal operation.

trays; a realistic art in entirety, an art in which impressionism, cubism, futurism or any other branch of modernism or ultra-modernism, has no place at all, and can never have.

In explaining or teaching a new procedure of operation it is essential for the surgeon to have the most important steps of that operation illustrated, because with mere words it is difficult to convey to the mind of even a well-trained surgeon the technical details of an operation he has never witnessed.

Practically every operative procedure should be illustrated with black and white drawings, as color means little in such cases. Once a specimen is removed from the body, however, it is often necessary to make drawings in color. This is due to the fact that a diagnosis may ofttimes hinge on the color of a specimen.

In teaching anatomy, drawings play a most important part. The degree of perfection and the importance of an anatomical book depend largely on how well it is illustrated. Not only does this hold true of medical books but of scientific books as a whole.

Not a New Art

Medical illustration or scientific illustration is not a new art. It practically began with time. The old Greeks used it in a great number of cases; Cleopatra had the birth of one of her children vividly illustrated on the walls of a temple. Though the type or style of drawings used in those early days by the Egyptians had little explanatory value, the fact remains that an attempt to tell the story of medical practices of the times was not lacking.

During the Renaissance, medical illustration in the form of engraving and painting reached a high degree of excellence along with other branches of art. In fact, medical books of that time have a greater value as works of art than for the knowledge they contain about the treatment of disease. Unfortunately such books were illustrated from an art standpoint rather than from a scientific standpoint; that is to say, beautiful drawings of anatomy were made which embraced about all the rules and principles of art but were often deficient as to anatomical construction. Therefore it is necessary for the medical illustrator to have as complete a knowledge of anatomy as the man whose book he is illustrating.

It is no exaggeration to say that physicians of the fourteenth and fifteenth centuries owed much of their knowledge of anatomy to artists. Some of the drawings made by Leonardo da Vinci show that he probably possessed a greater knowledge of anatomy and drawing than any of his fellow men.

Dissection of a human body was prohibited by both church and civil law in that early period. Later, when partial dissection was legalized, it was still held a crime to open the cranium since the brain was considered the seat of the soul. Such laws retarded the artist and physician in giving to the scientific world any considerable knowledge of anatomy.

From that time to the present, scientific medical book illustration has gradually grown in perfection and popularity. At the present it is at a high standard and will be improved only by the discovery of new and better principles of perspective, composition, modeling, color and technic.

Possibly the man who has done most to advance the scientific art of medical book illustration in the last fifty years is Max Brödel. He is a German by birth but emigrated to the United States some thirty years ago. The first school of medical art in America was instituted at Johns Hopkins University by Mr. Brödel in 1910. Up to that time he had been illustrating the books of Dr. Howard A. Kelly, possibly the best known specialist in gynecology in America, and it can be said without exaggeration that Dr. Kelly's books are the best illustrated of any medical books in the world.

When Mr. Brödel's work for Dr. Kelly had been finished, an effort was made by the surgeons of Johns Hopkins School of Medicine to persuade him to remain in the university as an artist, but Mr. Brödel was too engrossed in his dream of forming a school of medical illustration. For a time it looked as if Baltimore was to lose this great artist. Dr. William Osler, then in England, headed a movement for the foundation of an endowment fund for such a school at Hopkins.

"Don't desert us, Max," he wrote to Brödel, urging him not to accept any of the many offers he had received elsewhere. Perhaps the best of these offers was from the Mayo Clinic.

Finally, in 1910, the School of Art as Applied to Medicine was established in the School of Medicine at Johns Hopkins University, and the last twenty years has seen the fulfilment of Max Brödel's dream. His students are filling the most important positions in America and many are in foreign fields. It is not uncommon to see in his classroom students of many nationalities. Mr. Brödel is extremely modest about his own abilities but rather delights in telling of the successes scored by fledglings who have left the school.

Sculpture's Place in Medicine

Not only do drawing and painting play an important part as assistants to medicine, but a sister art, sculpture, has its place also. Casts made in wax of surface lesions such as cancers, tumors, ulcers and deformities of the bone are not unusual. Casts of deformities of the face, such as a broken nose, are often made in plaster of paris before that deformity is corrected by plastic surgery or by other methods of making face and form more beautiful or at least normal.

After the correction a second cast is made to show by comparison just what has been accomplished.

Many people unjustly believe that only extremely vain persons have plastic surgical operations performed because they wish to be made more beautiful. Physicians and psychologists, however, have discovered that such deformities and abnormalities have definite psychologic effects on the unfortunate person possessing them. A defect can often cause a person who has all his life been an extrovert, an attractive animated individual, to become a retiring, self-conscious neurotic. Therefore as a result of the mental inferiority complex that such a deformity may produce reliable medical clinics for the correction of obvious facial defects are rapidly being established.

Physicians are taking ideas from the artist as to the perfection and beauty of the human body. An outstanding example is the modern operation for the correction of harelip. Years ago that gaping congenital deformity was simply sutured together leaving an ugly, noticeable scar and notch in the upper lip. Then an artist came along and showed the physician that a normal upper lip does not have such a notch but a small tip or protuberance that hangs down a little lower than the rest of the lip.

The physician at once recognized where the old method of repairing harelip was faulty. Therefore, he devised an operation whereby a little tip or prominence was actually transplanted from another part of the upper lip to the proper place for that prominence. He also devised sutures that would hide any scar that may be formed when the lip was sewed together. In the course of a year or so after such an operation the scar becomes invisible and the patient has a perfectly normal pair of lips.

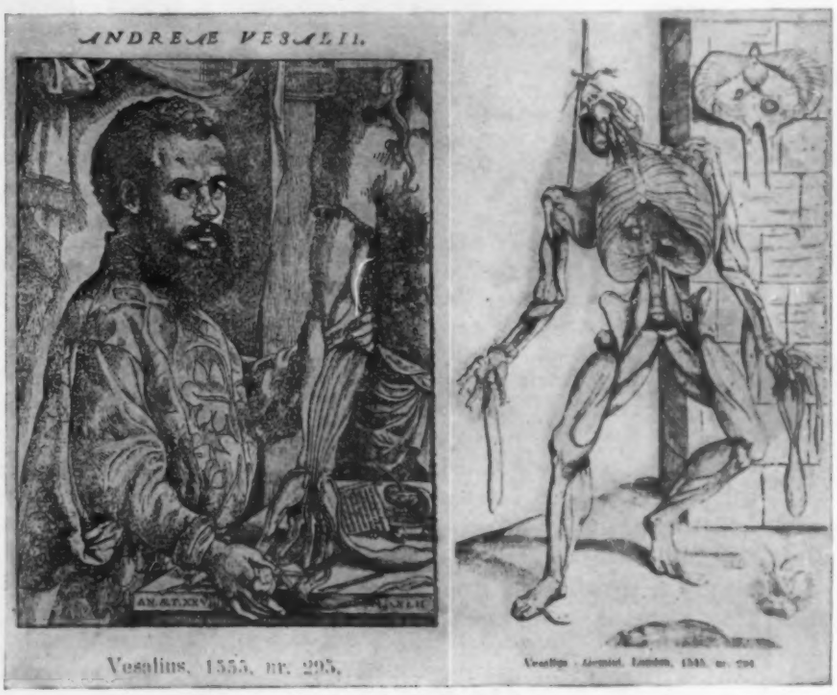
The training of the artist has developed his natural ability to observe minute details and photograph them upon his brain. Later he is able to reproduce them on paper because in his brain the picture is clear and complete. The same picture in the brain of the average person is only hazy and unfinished; it would be completely lacking in necessary facts that would be required by the artist.

This grasping of detail plus the ability to measure with his eye, not only inch for inch, but in ratio and proportion of the inch on his paper to the foot or fraction thereof to the model or subject he is drawing and his ability to reproduce details measures his genius.

Not only can casts and models of deformities of the body and anatomical parts be made in plaster of paris, but they can also be made in colored wax. These wax models are more true to the original and are practically invaluable for teaching purposes. They also serve as a permanent record of the case studied.

The outstanding medical sculptor in the United States, and possibly in the world, is Dr. Vladimir Fortunato. This sculptor-physician's work has attracted international attention in medical circles. In 1927, he was awarded the Treasury Department's gold medal for lifelike vaccination models, showing the types of reaction to smallpox vaccines.

This sculptor-physician is an Italian by birth but was reared in Russia. He has held the position of medical sculptor at Johns Hopkins University School of Medicine for several years.

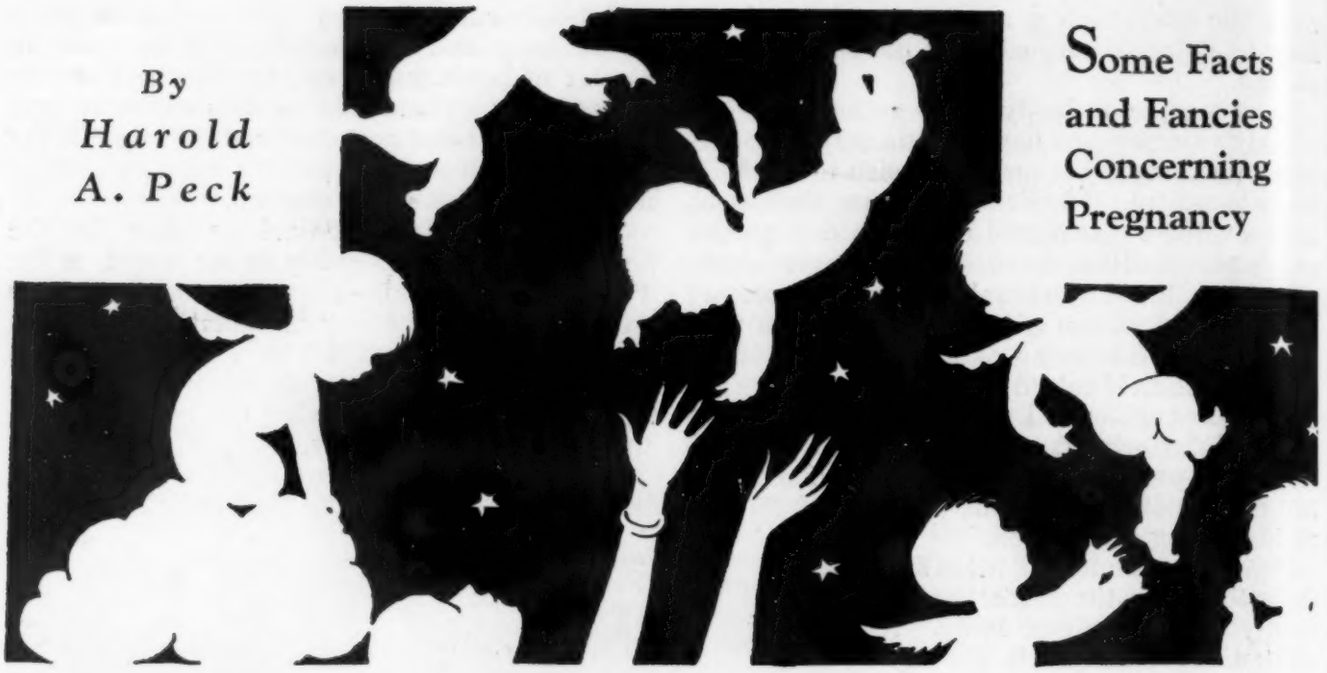


A drawing of Vesalius and an illustration from his book.

Some may wonder why photographic records are not sufficient for permanent records without the work of the painter and sculptor. Although the photograph does play an important part in the teaching of medicine, it has a limited field. Photographs of an operation often do not actually teach as much as a diagrammatic sketch of that operation. The photograph is a picture of any thing as it is seen in one position, while it is often necessary to make, in a single drawing, the same subject as it may appear in many positions, also to show anatomical structures that lie underneath the surface.

But this does not mean that the photograph is unnecessary. In fact, it is as important as a drawing. Its use in medicine will be considered in the next issue.

By
Harold
A. Peck



Some Facts and Fancies Concerning Pregnancy

The Care of the Expectant Mother

PRENATAL care has accomplished for the mysteries of pregnancy what science has done to clarify the hidden problems of the universe. No woman today should be without the knowledge about her pregnancy that can be obtained from competent sources. Clairvoyance, mysticism, hoodooism and all the other isms need not bother the prospective mother. Her physician, nurse or prenatal clinic attendant will put her on the right track if she will but seek counsel.

From one of these sources the expectant mother will learn that it makes no difference what phase the moon was in when she conceived as to whether her baby will be male or female, short or tall, fat or thin. She will also learn that most of the things she may have been told are illogical and have no basis in fact.

Can't Predict Sex of Child

No one yet has been able to have boys or girls at will despite beliefs to the contrary. No one can tell the sex of the unborn babe by counting the number of its heart beats per minute. It is all a guess with the odds equal for the guesser. He can't be very wrong. It must be either a boy or girl. Again, it makes no difference how a woman carries her babe; whether high or low, back or front or which side; how she walks or sits, what food she craves or whether she is cross or amiable. None of these have any value at all.

The dean of American obstetricians, Dr. J. Whitridge Williams, was asked what he told a patient when she asked the sex of her unborn child. He replied, "I ask her which she wishes and then tell her it will be the opposite sex. If she gets her wish she is so delighted that she forgets what I said, and if it is what I said, I become a great man."

A word about foods. Do not be afraid to eat the food that agrees with you, and immediately stop eating that which does not. Do not force yourself to eat a food that is supposed to be good for you at the expense of upsetting your digestion. That is foolish. Other foods will furnish the same ingredients and will be digestible. Don't forget to consume a quart of milk daily, either as a drink or in the cooking. There is an old adage that runs "for every child a tooth"; while not true in a specific sense, it nevertheless calls attention to the softening of the teeth that is a common accompaniment of pregnancy, for the demand for lime by the growing baby is great. Fortunately this lime depletion can be offset by the daily use of a quart of milk.

Don't Neglect the Teeth

Don't neglect your teeth because of the old fear that no dentistry should be done in pregnancy. With the modern methods of alleviating pain and the more expert methods of extraction, there is no operation on the teeth that cannot

be done with safety. As a matter of fact, much suffering can be avoided and possible damage to vital organs offset by early and consistent attention to decayed or diseased teeth.

Do not overeat. Eat what you feel is enough and stop. Pick out good nourishing food—cereals, vegetables, fruits, dairy products, meat. Nature will see that the baby gets its share. If you try to eat for two, as is so commonly ill-advised, you are likely to upset your digestion and then you will be worse off than if you did not eat enough.

Do not overexercise. Take what exercise you feel suitable in the open air if possible. Never force yourself to do the things that nature cries against. If you feel tired, rest.

Do not be afraid to reach for things within normal reach. Many think that reaching will make the navel cord loop itself around the baby's neck. There is no scientific basis for this belief. You could reach for the moon and it wouldn't disturb the position of your baby.

Get Plenty of Sleep

Do not cheat yourself of sleep. There is no greater healer of tired muscles and irritable nerves. Get at least nine hours' sleep in a well aired room. Never mind the position you sleep in so long as it is comfortable.

Do not be afraid to drink water and lots of it. Your physician will tell you if you are overdoing it. He will tell you if you are overcrowding your system. Do not be afraid of increasing the amount of water surrounding the baby.

Do not be afraid of the baby's growing to you.

Do not be afraid of marking your baby because you have seen some disgusting sight or heard some horrible tale. So-called birthmarks are results of defects in the building of the delicate and complicated structure we call the human body much as a building can be out of plumb if a mason uses uneven bricks or a carpenter does not square up the joints. When you consider that the complex human body is made up from one single cell which divides and subdivides countless numbers of times and

from this primary cell are made the different tissues such as skin, muscle, bone, heart, lungs, kidneys, eyes and brain, it is not hard to see how some of these cells may go astray and overdevelop or some die and leave a gap, producing the abnormalities that are wrongly called birthmarks.

Should Seek Medical Advice Early

Pregnancy is believed to be a normal condition; it is a state that woman is capable of entering but whether she emerges and is left in her previous good health is another question. Intelligent supervision of every pregnant woman will undeniably bring about a happy result in the majority of cases.

Every woman, as soon as she is pregnant, should put herself under the care of her physician or consult a prenatal clinic. Under the auspices of one or the other she is cared for throughout her pregnancy. A history is taken covering family health, past and present health and a physical examination is made to determine any evidence of body reaction to present conditions. Blood pressure is taken, urine examined, and weight recorded. All these things are set down and comparisons made at later visits. The pelvis is measured to determine whether, within certain limits, an average size baby will be able safely to travel through the birth canal. At each visit, usually about once a month for the first five or six months and thereafter every two or three weeks, or even weekly, examinations are made and compari-

sons carried out with the previous notes to determine just how much of a burden the pregnancy is to the woman. "A waste of time and energy," some one will say. "Unnecessary," says another. "Too expensive," says a third.

Industries spend millions to protect their employees. Is there any institution that deserves protection more than womanhood? Is there anything that deserves a healthy birthright more than a baby?

Pregnancy is health under a strain, and it is the effects of this strain that a physician sees during visits and for which he gives advice, so that a woman may regulate her life to a point at which there is little or no burden on her vital organs.

Many conditions that arise during pregnancy are trivial and impose no burden on the mother. A great many conditions arise which seem trivial but which if not properly supervised become matters of serious importance. They are conditions that only a physician can supervise intelligently.

Kidney disease is not infrequently a complication of pregnancy. Let me show you what intelligent prenatal care will do to prevent this dreaded complication: At Bellevue Hospital in New York City, 1,200 maternity cases were recorded in 1920; 900 had prenatal care and not one case of eclampsia (kidney disease plus convulsions) developed; among the 300 who did not receive prenatal care, ten cases of convulsions were noted. This is only one of the many conditions that can be eliminated from the troubles that may beset the pregnant woman. The physician is the best pilot over the hazardous course.

It should be every woman's desert that she have a comfortable, healthy pregnancy and that she arrive at the period of labor unharassed by complications, rested and ready for the work that is before her. If she will carry out this supervision as directed, her labor will be made the easier and her convalescence healthier, so that by the end of three weeks she will be able to resume her rôle as wife and mother.

Let prophylaxis through prenatal care be your watchword!

Repose confidence in your physician and nurse. Believe that they will guard you at every turn and you will be happy in the final realization that the combined efforts have not been in vain.

Don't Be Misled by Food Fakers

THE food faker has largely taken the place of the old-fashioned patent medicine faker, says Dr. W. McKim Marriott, specialist in children's diseases, writing in *The Journal* of the American Medical Association.

Proprietary foods have their place, but the difficulty is to separate the good from the bad, says Dr. Marriott. There are diabetic foods, predigested foods and even brain foods. There are foods guaranteed to make us fat or thin, to give us vim, vigor and vitality, to make us beautiful and to keep us from growing old, to give us "it" and to ward off the perils of high blood pressure, Bright's disease, acidosis, diabetes and dyspepsia.

As the knowledge of nutrition has given impetus to the use of diet in the treatment of disease, the food faker has followed closely after the investigator. He picks out an occasional truth, distorts it and broadcasts it to an unsuspecting public.

All of this is a serious handicap to the legitimate food manufacturer, who supplies clean, tasty food in convenient form and markets it for what it is worth. In a sense many everyday foods are proprietary foods, as they are designated by brand names. But it is with the foods for which unique health claims are made that Dr. Marriott is concerned.

Proprietary foods are often convenient, but they are not a necessity. Every dietetic necessity can be met by ordinary, everyday foods, Dr. Marriott declares. No matter what name a food is sold under, it still consists of one or more of the recognized food constituents, proteins, carbohydrates, fats, vitamins and minerals, and it cannot accomplish any results that cannot be accomplished by the same constituents in their ordinary form.

The chief objections to proprietary foods are that sick persons may come to believe that it is essential for them to eat some special food, often expensive, to maintain health; that the composition of these foods is often unknown and that they may be marketed with claims that are unwarranted.

It is to clear up the confusion of this situation that the American Medical Association has established a Committee on Foods, which investigates proprietary foods offered to the medical profession in the same way that its Council on Pharmacy and Chemistry investigates drugs. Reports of this committee will be published regularly and these reports will furnish authoritative information as to the composition and value of the many food products on the market. A list of these foods will appear from time to time in HYGEIA.

Manhandling the Mosquito

By

Arthur Torrance

MY FACE was all lathered and I was about to begin that ticklish morning job of shaving when an insistent knock on the door of my New York apartment interrupted me.

"I'm the exterminator," said an impersonal, business-like individual, armed with a spray-gun and a bag of poison.

The chilliness of such a sinister suggestion shocked me into a state of preparedness, and I took a firm grip on the handle of my Gillette.

Then the self-announced killer cleared the atmosphere by explaining that he was going through the building looking for mice.

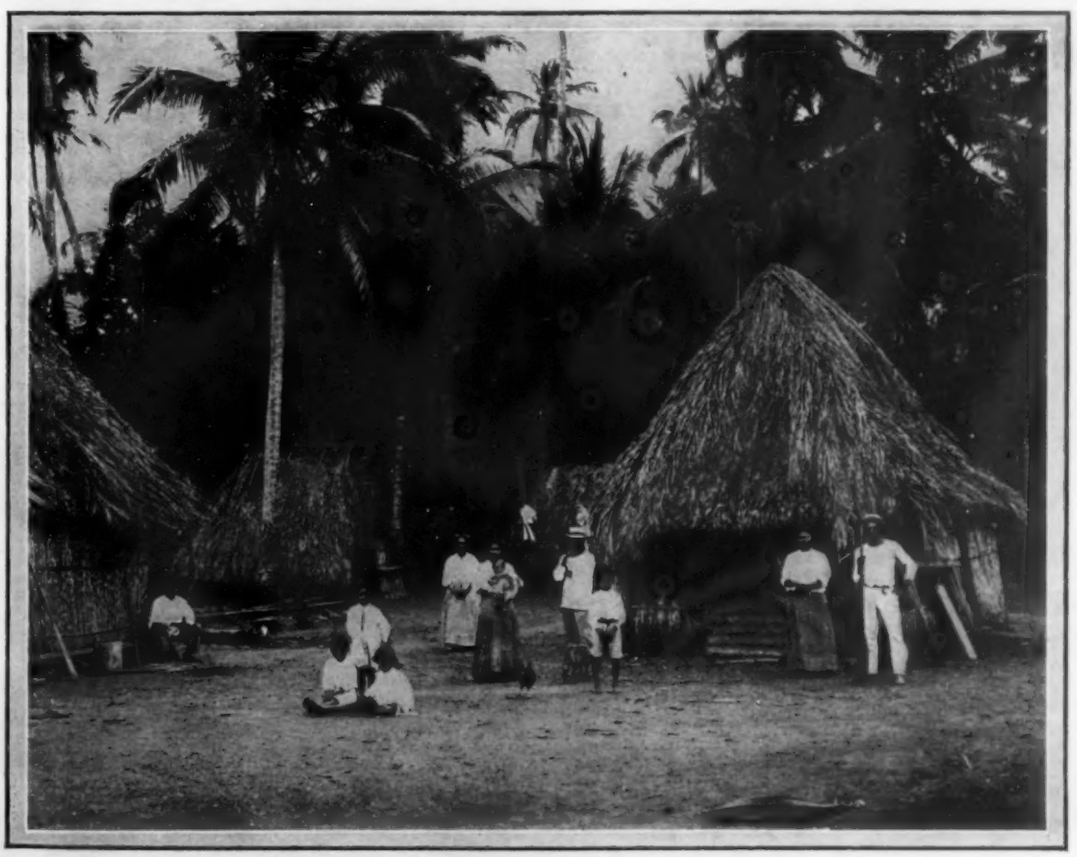
Thus I learned of present-day methods employed by owners of buildings on Fifth Avenue to rid their property of rodent intruders.

Being something of a specialist in tropical hygiene, I was struck with the drastic name of the man employed in a very old-fashioned form of necessary sanitation. He was an exterminator.

As I thought it over, it occurred to me that I too was an exterminator. But in the tropics we have certainly traveled along faster in the matter of rodent control than have our colleagues here at home.

It has been necessary for us to think more bitterly about mice and rats out in the hot countries. Today in Rangoon, in Bangkok, in Singapore, in Manila, and many other tropical centers of the world our new buildings are so constructed that not even a tiny mouse can crash the blockade of steel screen and reenforced concrete. Because tropical hygiene has not neglected the important matter of rodent control, and has, in addition to careful modern building, trained the natives to "swat the rat," it is estimated that more than 100,000 human lives were saved last year in India and China.

In Bombay, Calcutta and Canton, the natives now regularly wage war on rats and mice, despite strong religious feelings about taking



Native huts in Panama, a tropical hygiene battleground.

life of any kind. In Bombay, an average of twenty rats were caught per month per house in 1923. Last year the average catch of rats per house per month in the same city was four.

The saving of the 100,000 human lives is directly due to the extermination of the rat. For the rat carries plague, and tropical hygiene is determined to abolish plague from the earth.

The great work of tropical medicine is to make the warmer countries of the world fit for human use. This means in the first place that territories must be cleaned up and dangers removed so that the aborigine can live in his own country and enjoy happy well being.

The story of the rat and the plague is only one chapter of this tale. If we could know, for instance, how many human beings are killed every year by her ladyship the mosquito, the figure would run into astounding millions. It is conceded that more than four million people die every year in the British colonies alone by malaria. What happens in the utterly uncontrolled parts of tropical America, Africa and Asia, it is impossible even to guess.

And malaria is only one of the diseases for which the mosquito is responsible. Read the list: The mosquito of the genus *Anopheles* spreads malaria. The genus *Stegomyia* (*Aedes aegypti*) is answerable for yellow fever. The genus *Culex* for elephantiasis and dengue fever.

A woman chatting to me recently while the mosquitoes buzzed about us said, "Wouldn't it be lovely to fly about and bite mosquitoes?"

Exactly! And that is the way lady mosquitoes probably sing to their boy friends about how much fun they have flying about and biting folks, while the men mosquitoes sigh enviously.

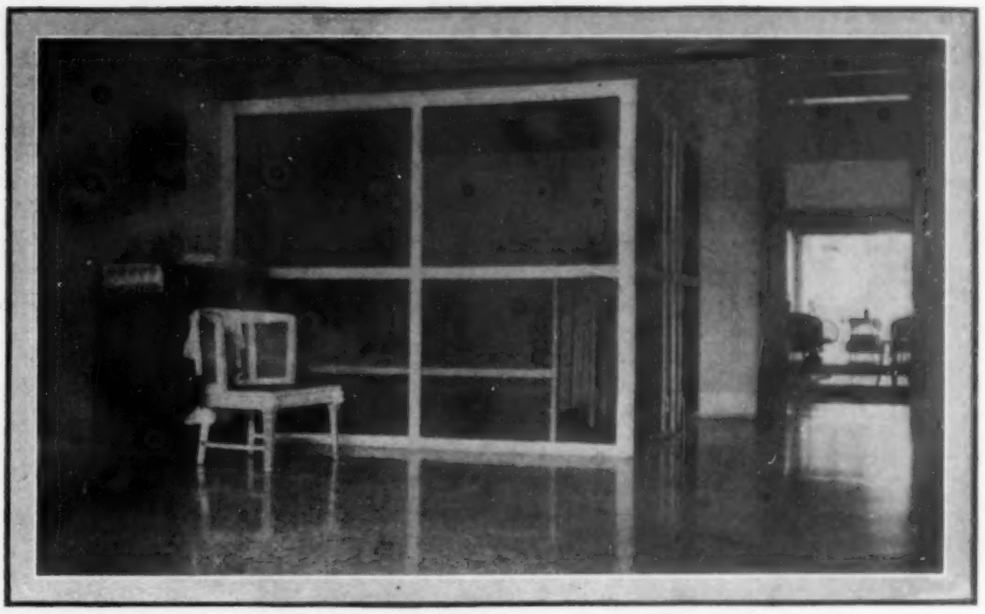
For let me tell you the straight of it at once. Tropical medical scientists have proved that only the mosquitoes that suck blood are able to pass on disease. The male mosquito is not a blood-sucker. The female mosquito is. Again, as Rudyard Kipling told us long ago, there is evidence that the female of the species is more deadly than the male.

Then there is the dreaded tsetse fly of tropical Africa. Until a few years ago, when the German tropical doctor, Kleine, and Doctor Louise Pierce of the Rockefeller Foundation discovered cures for sleeping sickness, this murderous insect killed millions of native Africans every year. Today less than fifty thousand die annually of this disease.

The second aim of tropical medicine and hygiene is to clean up the warm lands so that white people can move there and live in health and safety. Something of this nature must be done shortly in order to give relief to the overpopulated countries of the temperate zone. Tropical medical officers have proved that the old bugaboo about the tropical climates being so deadly is just a scarecrow, after all. They have shown that this evil reputation is due to diseases caused by parasites whose invasion is now almost entirely preventable. Much has been accomplished by health agencies.

The job of cleaning up the tropics has been termed an adventure. Thirty years ago it was just that—a glorious adventure. A man engaging in this work might lose his life or he might gain fame and the gratitude of the race.

Above, clearing the jungle preparatory to building hygienic workmen's homes. To the right, bush clearing in a mosquito destruction campaign.



A "mosquito house" built within a bedroom of a tropical home in which mosquitoes are particularly prevalent. This is typical of Bangkok or Malacca.

But today so well has the preliminary work been done that the remaining task is rather a challenge to health scientists and sanitarians. It is a big job that is to be done, a part of the prosaic day's work.

The achievements to date have been truly marvelous. Particularly are we justified in pointing with pride, as the politicians say, to the work of the last thirty years.

During this time nearly every sinister tropical disease has been defeated. Malaria, yellow fever, typhus, dysentery, syphilis and leprosy have all been mastered. Today the tropics are healthful. White, black, brown or yellow skinned persons may live there and be prosperous.

American Achievements

To show a part of what American leaders in tropical hygiene have done in this line, let us look at the Isthmus of Panama. The success of American colonization in this old pest-hole of yellow fever and malaria has become almost legendary. Yet before the time of General Gorgas, during the years 1881-1889, while the French under de Lesseps made an attempt to build the canal, 16,000 white employees died from tropical disease.

Gorgas estimated that 2,000 of these 16,000 deaths were due to yellow fever. In contrast, the present record of the Panama Canal health department shows that only two persons, one white and one colored, have died of this disease in the Canal Zone during the last eight years.

The same story can be told of American colonization in the Philippines and Porto Rico.

Today it is not necessary for the tropical traveler to know a great deal about tropical diseases in order to feel safe while journeying. A game of bridge was in progress where I was visiting recently, and the dummy—dummy in more ways than one—blurted out, apropos of an earlier discussion on tropical medicine, "I don't care, doctor, I am sorry for folks that go to live in the tropics. How they ever avoid the dangers and return home I can't understand."

Since I had already tried to explain how different the situation with regard to maintaining good health has become in the tropics in recent years, I simply told him that the great secret of good health in the warm countries is practically the same as at home; namely, keeping fit. The maintenance of good bodily health and mental vigor is as easy in Mombasa as in Maine.

A Day's Routine in the Tropics

Here is a part of the routine I have tried to observe myself in a rather sustained and healthy tropical career:

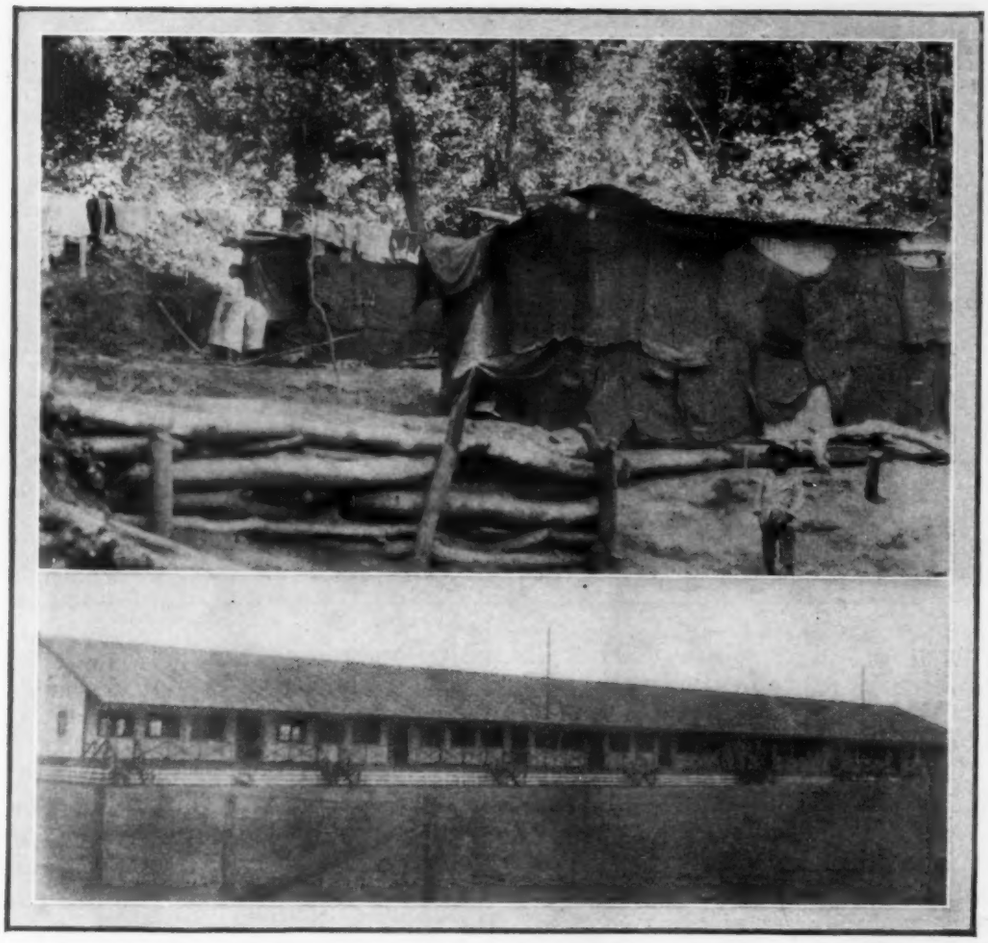
At least two good meals daily, with meat or fish. Good, sustaining food is important in the tropics.

Great care in drinking. Water should always be boiled. Tea and coffee may be taken, but sparingly. Alcohol should never be touched while the sun is up; a good rule is "no alcohol before 6 p. m." In most parts of the tropics where a steady demand is made upon body and brain, a whisky and soda after six, and therefore usually called a "sundowner," is often beneficial.

No economizing on food or sleep. To cut down on either of these two essentials is false saving and often leads to the desire for overindulgence or for stimulating oneself with alcohol—the beginning of the end for a successful tropical career.

I try to go without a drink between meals while the sun is up. A piece of mint chewing gum is a wonderful thirst quencher.

It is good to start work early after a cold shower and a light breakfast of two raw eggs, buttered toast and some fruit juice.



At the top, native houses on the fringe of the jungle have now been removed and the school shown below has been built on the same site by American enterprise and money.

Tiffin (lunch) I arrange to have about 11:30, and it is best to eat a good meat meal at this time. After lunch comes siesta—rest, quiet and a general cooling off until 1:30.

Work should be stopped at 4:30, and the program from then until sundown includes outdoor games, such as golf or tennis—both good liver-floggers and tune-ups for the system in general.

A shower bath, change of clothes, two rubbers of bridge, and, at 7:30, a good square meal with meat or fish rounds out the day. Bedtime is 10 p. m.

In mosquito countries one must be careful after sundown to protect the body, ankles particularly, from mosquito attacks. Sleeping under a mosquito net becomes a rule of life. It saves funeral expenses, which may be used to pay your club bills.

Another good idea for you as a tropical dweller is to get the servants on your side in the matter of cleanliness and acquaint them a little with the why and wherefore of disease prevention. Tact, patience and a sympathetic appreciation of the natives' mental attitude toward you and your occidental ways, which seem very strange to them, will be of untold help in getting good service.

Here are a few of the more important diseases found in different parts of the tropical world:

Malaria, caused by a plasmodium parasite pumped into the blood by the female anopheles. It causes attacks of fever and destroys the red corpuscles in the blood. There is only one really efficient way to avoid malaria and that is to "manhandle the mosquito." Kill them all.

Elephantiasis, caused by a filaria parasite spread by the mosquito.

Dengue fever, caused by mosquitoes. This is a disease that strongly resembles a sudden attack of acute rheumatism. By some it is called "break-bone fever."

Yellow fever, spread by the "tiger" mosquito.

We of the tropics know that for prevention of all these diseases we must clean up the swamps and other mosquito-breeding places. We must kill off these pests.

Cholera, caused by an invasion of the system by the cholera vibrio. It is caused by impure water. Infected material may be spread by flies. Pure water, fly prevention, cleanliness and care in the use of fresh vegetables in cholera areas are the best preventive measures.

Dysentery, spread the same way as cholera and prevented by the same measures.

Typhoid fever, spread by the same method as the others; fingers, flies, food and water are points to remember in prevention.

Plague, spread by rats. Rats carry the fleas and the fleas carry the plague bacillus. When an infected flea bites a human being there is little hope of avoiding plague. "Kill all rats" is the working slogan for eradicating plague.

Leprosy, kala-azar, typhus, leishmaniosis, Bagdad button, hookworm, guinea-worm, African sleeping sickness—these are all diseases now controlled by public service.

One going into the tropics should not dwell upon these diseases or think about them. He should simply live a normal, clean life, avoid taking risks by being careless and follow the rules about prophylactic measures for the particular diseases of the locality he is in. If he does these things, his chances for health are good.

After a heavy dinner, children wake up dull and logy with a doubtful enthusiasm for breakfast, the most important meal in their day. Rich, highly seasoned food makes too great a demand on the digestive system.

Suppers — *Sizes* 6, 8 *and* 10

By Helen P. Schauffler

SUPPER for our chubby twos and fours is a mild matter of blandly rotating cereals or creamy vegetable purées with a generous mug of milk, followed by a baked apple or some stewed fruit. For discriminating connoisseurs of this age a routine menu has, or should have, a certain charm. Supper for this age is a quiet, matter-of-fact function, served not later than 5:30 or 6 p. m.

But with their elder brothers and sisters ranging in age from 6 to 10, supper becomes a more elaborate affair. While many mothers find it more convenient to let these gentry stay up until the almost universal dinner hour of 7 o'clock, pediatricians and others who are studying the health program of these older children concur that the main meal of the day should be given at noon, and that supper should still be simple and early. But it must be a heartier meal than cereal and stewed fruit.

By the time we have provided for such a supper, we find ourselves preparing two full evening meals. If planned with reference to the other meals of the day, and even of the day following, however, this middle-sized supper can be prepared quickly and in many cases at the same time as the evening meal.

Children of this age are growing rapidly. Their recreation is more strenuous and their furnaces must be stoked with energy-storing fuel. But it must not be of the highly seasoned, rich variety, which makes too great a demand on the digestive system at the very time in the day when the whole complex system of a sturdy, growing child needs rest and relaxation. Many mothers report to doctors that their 8-year-olds are subject to slight attacks of indigestion early in the morning, that they sleep restlessly and that they wake up dull and logy with a doubtful enthusiasm for breakfast, which is the most important meal in a child's day. It almost invariably develops that these children have a heavy dinner in the evening.

Life is a complex affair for children as well as adults in this rushing era and they ought to be in bed by 7:30. Even with a family dinner served at 6:30, they will go to bed on a stomach full of partially digested food and are off to a bad start for the ten or twelve hours of sleep that they must have.

We should go to the extra trouble of serving these middle-sized bears a simple, adequate supper at 6 o'clock, so that they can be in bed by 7:30, with time in between for some quiet recreation, reading and a warm bath. As we do this, we can watch the gain in weight, nervous control and general physical tone, along with the decrease of restless nights, digestive upsets and nervous constipation.

Here are a few suggestions as to menus and arrangements. Suppose we are having a roast or baked dish of

some sort for the regular dinner, requiring a hot oven. Utilize this heat for an early supper and serve one of these quickly prepared baked dishes.

Spoon Bread

To 1 pint of milk add 1 scant half cup of corn meal, 3 tablespoonfuls of sugar, salt, 1 small egg slightly beaten, 1 level teaspoonful of baking powder and a teaspoonful of butter. Stir gently until well mixed. Pour into a deep baking dish and bake in a moderate oven for three quarters of an hour, increasing the heat for browning the last ten minutes. Other cereals may be substituted for corn meal, such as farina or wheatena.

Baked Macaroni with Chicken or Meat Gravy

Boil macaroni until tender. Drain and pack in a baking dish with chicken or meat gravy to which a generous quantity of milk has been added. A small quantity of minced chicken, liver or lamb or cooked green vegetable may be added if it is on hand. Sprinkle with slightly buttered bread crumbs and bake until brown.

Chinese Nests

Line an individual baking dish with boiled rice. Brush lightly with melted butter. Fill with a well beaten egg to which left-over vegetables such as carrots, beans, spinach and celery may be added. Bake in a quick oven, to brown and set the egg.

Escalloped Vegetables

A smooth, rather thin cream sauce is an excellent way of adding protein and calories to the diet of the underweight child who may be a little bored with milk. To boiled carrots, cauliflower, celery, cabbage or onions, add a smooth cream sauce with perhaps a fleck of pimento for color effect. Cover with bread crumbs or a bit of mashed potato or rice and bake until brown.

Souffle of Vegetable

Mince or rub through a strainer 1 cup of cooked carrots or spinach or tender corn. Add 1 cup of stale bread crumbs, which have soaked several minutes in three-fourths cup of milk. Add yolks of 2 eggs. Season and add 1 teaspoonful of melted butter. Fold in the beaten whites. Bake fifteen minutes in a quick oven. This may be baked in little individual dishes.

If your oven is not to be heated try one of these recipes.

Spanish Toast

To one small can of tomatoes add salt, 1 teaspoonful of sugar, a few celery leaves, a slice of onion minced. Let this simmer for ten minutes. Thicken slightly. Pour over buttered toast.

Red Bunny

To canned tomato soup add 1 egg slightly beaten. Cook one minute and serve on toast croustades; i. e., large cubes of toasted bread.

King Midas Eggs

Boil eggs ten minutes. Peel and remove yolks. Fill white halves with rice or chopped boiled macaroni. Make a thin white sauce of whole milk. Place stuffed whites on toast or croustades. Cover with white sauce. Gild with minced yolks.

Scotch Broth

This can be made at any time during the day and heated in five minutes. To a small soup bone and a pound of shin beef or shoulder of lamb, add 5 cups of cold water and 1 tablespoonful of salt. Let stand for at least half an hour. Add a piece of bayleaf and ½ cup each of diced celery, onions, carrots, turnips and a small parsnip. Add a scant half cup of barley or cracked wheat and a cup of tomato juice. Let boil slowly for three or more hours. This is a stimulating soup, rich in vegetable calories.

In serving these supper soups to children who are underweight, a few tablespoonfuls of cooked cereal will thicken and enrich them in carbohydrates as well. Toasted croutons of whole wheat bread are valuable substitutes for crackers. Corn and potato chowders are also popular as suppers.

Many salads that grace the regular dinner may be served as well at this early supper and are an excellent way to add green vegetables to the diet. Fresh tomatoes are high in caloric value and may be served sliced with a French dressing containing a generous proportion of oil and not too highly seasoned. Children should be taught to enjoy a plain lettuce and romaine salad with French dressing. A salad made of chopped celery, cabbage and apple served with mayonnaise makes an excellent pièce de résistance for supper. Fruit salads make an excellent substitute for desserts. They should be served with a slightly sweetened French dressing, never with mayonnaise.

As for desserts, even our older children ought not to have graduated out of the fresh and cooked fruit class. This may be varied by a light fruit whip or jelly if that happens to be on the dinner menu for the evening.

In one family where there are two children of high tea age, early suppers are served throughout the week but on either Friday or Saturday evening they are permitted to sit up to dinner with their parents. Menus for these gala occasions are arranged with this in mind, and the children are often encouraged to have a guest or two. Such an arrangement will be found to solve many a minor social problem as well as one of household routine.

Suggested Menus

Monday.—Baked macaroni with chicken gravy, fresh tomato and whole wheat bread sandwich, milk, stewed cherries, ginger snaps.

Tuesday.—Scotch broth, whole wheat croutons, fruit salad, French dressing.

Wednesday.—Tomato toast, raisin bread and cream cheese, cocoa, banana custard.

Thursday.—Spoon bread, bread and jelly, milk, apple, celery and cabbage salad, sponge cake.

Friday.—Chinese nests, rye bread and butter, chocolate milk shake, baked apple with sugar cooky.

Saturday (sit-up night).—King Midas eggs, baked stuffed potatoes, apricot whip, spice cookies (add cream of spinach soup if desired).

Sunday.—Mashed potato soup, orange and grapefruit salad, peanuts.

by
W.W. Bauer

The Sign *On Your House*

SOONER or later, if you have children, he finds you out, this fiend in human form. He comes snorting down the street in a chariot of fire. Before your house he stops, and the neighbors gather to condole or secretly to exult, depending upon the kind of neighbors they are or the kind that you have been. They nod and they whisper, gathering their own children close about them lest they be contaminated. Then for the next few weeks you have no friends, no acquaintances. You live in a world apart, shunned by all and sundry; one might think you were suffering with smallpox! And so perhaps you are, for the quarantine officer has just placed a sign on your house.

The story of quarantine is an essential part of the story of public health development. It was a part of the first functions of all health departments, and remains a part of them today. There seems no reason to believe that it will be abandoned or even greatly modified in the immediate future.

Quarantine Clumsy and Offensive

What is quarantine? It is a survival of the superstitious fear that grew out of ignorance concerning the causes of contagious diseases and how they were spread. It is the blind mechanism of defense against an unknown and terrible enemy; it was the only recourse known against many of the illnesses of the human race, and it remains just that today. We must still regard it as a necessary part of our program, but only because we as yet lack better weapons. We recognize it as offensive, clumsy, economically wasteful and in many instances ineffective, but in the present state of our knowledge we dare not abandon it.

Quarantine is the expression of the instinctive and wholly selfish impulse of the well to escape the fate of the sick. It was not conceived as an altruistic gesture for the preservation of the community health. It was purely a reaction of primitive fear. The unfortunate victims of diseases conceived to be transmissible were hustled unceremoniously to remote accommodations of the most inferior kind and abandoned there to live or die, survive or perish. It was a custom at first, not a law.

London Court Flees Plague

London was abandoned in the seventeenth century by the glittering but frightened court of Charles II, not by legal or royal decree, but by common consent to flee from the ravages of the black plague, which they could not understand and therefore could not combat. Perhaps they were not as cowardly as they seem, unless by comparison with the recorder Pepys, who stuck manfully to his job in the Navy office despite the plague, though he was as much scared as the rest.

With the passage of time, quarantine came naturally to be embodied in the law, and as human behavior became more tinctured with the milk of human kindness, quarantine has been humanized and so robbed of much of its former callous brutality. Even today it is not something which the average citizen welcomes or even tolerates with a moderate degree of

equanimity, unless he is more than ordinarily gifted with the priceless capability of putting himself in the other fellow's place. A better understanding of the reasons underlying certain quarantine restrictions may be of some service in making this necessary measure more bearable, if not popular.

Writing the principles of quarantine into the law, as is now done by all civilized nations, is undoubtedly necessary, but it has its unfortunate aspects, for law is notoriously inflexible and insensitive to progress. It is too easy to make laws and too hard to unmake them. The laws about quarantine have crystallized into too permanent form certain requirements that our later knowledge renders obsolete and in many instances ridiculous. Nevertheless, being laws, they must be enforced.

Quarantine laws differ in detail according to the state in which you happen to live, but it is possible to enumerate a few basic principles which, better understood, may make for more effective and at the same time more reasonable application of these, the only laws under the constitution of the United States which can deprive you of your liberty without a hearing in court.

Diseases Transmitted by the Breath

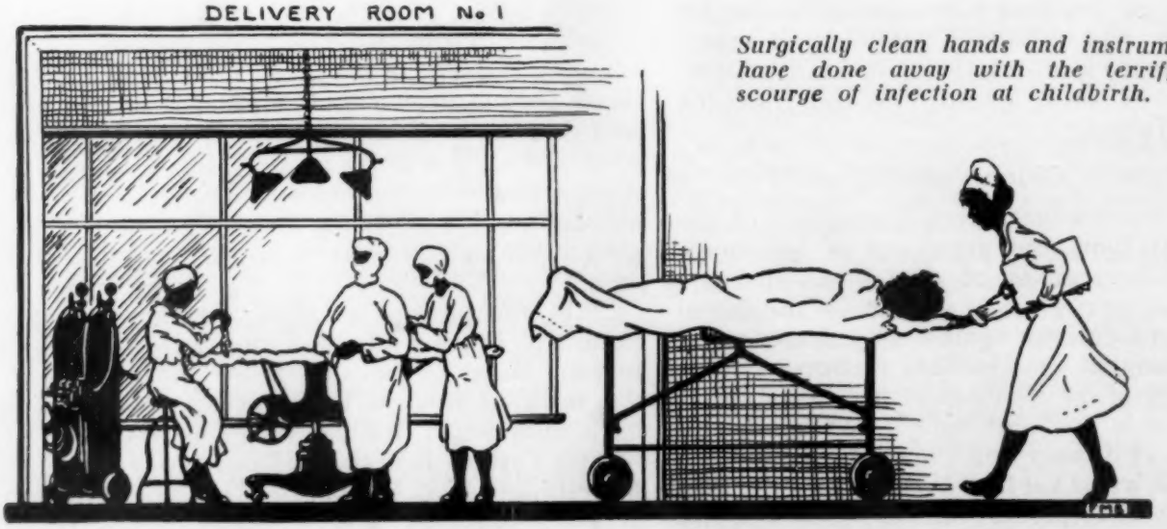
The first object of quarantine is to isolate the patient in such manner as to make the spread of the disease as unlikely as possible. This requires a knowledge of how the various diseases are spread, in order that the method of separation may truly accomplish what it sets out to do and may be applied with as little inconvenience as possible to the family. There are four principal ways in which a disease may be spread, and according to these the diseases are classified into four major types.

Most important is the group known as respiratory contagious diseases, those of the breathing apparatus. These may and do affect organs other than those with which we breathe; the classification has to do only with the means by which they are spread. They are taken in with the breath and expelled in the same way. They constitute not only the biggest and most important group, but the most difficult to control. Because of the diffusion of infection through the air with the breath, absolute separation of the patient is necessary, allowing entrance only to those needed for the care of the patient, who must be required to take special precautions for their own protection. The diseases in which transmission is by the breath include most of the more important and more common ones, such as diphtheria, scarlet fever, spinal meningitis, infantile paralysis, smallpox, measles, whooping cough, German measles, mumps, pneumonia, tuberculosis and influenza. To these are applied several forms of quarantine, based on the known characteristics of each disease.

Diseases Transmitted by Food and Drink

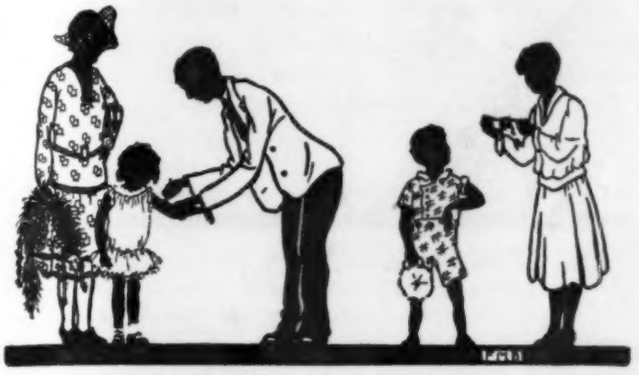
The second great group of communicable diseases is that in which the infection is acquired by swallowing the causative organisms, and is discharged through the bowels and the bladder, finding its way to the next patient more or less indirectly through food, water and milk which have become contaminated. These diseases obviously require a different type of isolation and are successfully cared for in open hospital wards or in the home, provided only that proper disposal is made of excreta. Consequently the quarantine laws can be made at once more specific, more lenient and more effective, and can be supplemented by sanitary engineering methods. Typhoid fever, dysentery, cholera, food poisonings of certain types often misnamed "ptomaine," and so-called "summer complaint" of babies are included in this category.

The third class is transmitted through abrasions or broken places in the skin. The segregation of these is a fairly simple matter, resolving merely into supervising the cleanliness of the



Surgically clean hands and instruments have done away with the terrifying scourge of infection at childbirth.

hands of those who attend such patients. Most of these patients are not quarantined but their cases are reportable to the health department so that proper instructions can be given about instituting precautions. Rabies, erysipelas, lockjaw, and certain rarer infections transmitted from animals to man are examples of this type, and sometimes the venereal diseases, especially syphilis, may also be transmitted in this way. Infection of mothers at childbirth, recognized by Semmelweiss and Oliver Wendell Holmes, is a classical instance not only of this kind of transmission, but of how application of a simple fact can reduce the importance of what was formerly a terrifying scourge. Doctors and nurses with clean hands and clean instruments



Some day quarantine can be abolished for at least two diseases—smallpox and diphtheria.

—surgically clean, of course—make the difference between safety and danger in this entire group of conditions.

Finally, we have the type of disease which can be transferred from patient to patient only by the intervention of a living host such as a mosquito, flea or tick. Obviously here it would do no good to quarantine the patient; the problem must be attacked by measures directed against the intermediate host. Charles II and his courtiers, abandoning London and carrying with them the fleas which spread bubonic plague, were accomplishing nothing for the prevention of the disease. Malaria, yellow fever, Rocky Mountain spotted fever, African sleeping sickness and a number of diseases transmitted by ticks belong among the insect-borne diseases.

The first objective, then, of quarantine laws, is to interpose obstacles of the proper nature which will interfere with the spread of the diseases. This implies a knowledge, to quote the United States Public Health Service, "of when, where and under what conditions these diseases are occurring." It is apparent that without this knowledge no health department can hope to take effective measures for prevention and control. Hence the contagious diseases are made reportable to local health officials. In later years, the power to require reporting has been exercised also for statistical purposes, by making certain diseases reportable with no immediate intention of placing control measures in effect, but for the sole purpose of adding to our knowledge about their prevalence.

Controlling Disease Carriers

A third purpose of contagious disease control has to do with persons in contact with known cases, for it is evident that these are the ones among whom the next cases may be expected to appear. In the same class with exposed persons are those known as carriers, who, as their name implies, carry the infection in their bodies but are not ill. These two kinds of persons are of infinitely more importance in the spread of epidemic diseases than the seriously ill, bedridden patient, and they are also unfortunately the most difficult to control.

The laws of quarantine also deal with the disposal of the dead. In this field they are almost completely archaic, restricting what may be done with the harmless dead body, when danger resides in the living persons attending the funerals. Much liberalization and rationalization of most laws governing the contagious disease dead is needed, providing more rigid restrictions of the living and less unseemly haste in disposing of the dead.

Having glanced briefly at the purposes of quarantine laws, we may now look at the principal kinds of quarantine, which are three. There is first the complete and absolute isolation of the patient from all except the necessary attendants. This is used for diseases of serious nature such as meningitis, diphtheria and smallpox or for those of which we have incomplete knowledge, such as scarlet fever. As applied to the home, it means division of the family by removing the wage-earners to another residence so that they may continue at their employment or the removal of the patient to an isolation hospital. It is expensive for the family, involving as it does expenditures for board outside the home or for hospital care, except in those communities which provide free hospitalization of contagious disease for their citizens. It is inconvenient and unpleasant, both for those confined with the patient and those dislodged from their accustomed surroundings. It comes at a time when anxiety about the outcome of the disease is sufficient burden of distress. No wonder it is met with resentment and sullen resistance at times, and yet, marvelous to relate, there are few laws whose administration places so much trust in cooperation of the family, which are so seldom violated in proportion to the provocation and the opportunity that exist for disregarding them.

A less rigid type of quarantine is that applied to certain of the diseases of children which are classed, sometimes without warrant, as minor in character; measles and whooping cough typify this group, though they are by no means to be

considered as mild and harmless under all conditions. These diseases are often handled by placarding the house without restricting the comings and goings of the adult persons living there, but excluding visitors, especially children, and keeping exposed children in such a house out of school if they have not had the disease.

The same type of restriction is applied in some localities to suspected cases of the disease in which the diagnosis is not definitely established and isolation pending investigation seems desirable. Exposed persons and carriers can also be effectively controlled by this modification of quarantine.

All restrictions applied to contagious diseases are based on the knowledge or lack of knowledge concerning particular conditions and on the importance of each as a cause of death, serious illness, loss of school time or interference with business and industry. In general, the more we know about a disease, the less it is regulated, because it is possible to make a few simple and well-directed rules which go straight to the heart of the matter. When knowledge is lacking or indefinite, it becomes necessary to prescribe regulations giving a wide margin of safety, and such regulations are inevitably severe.

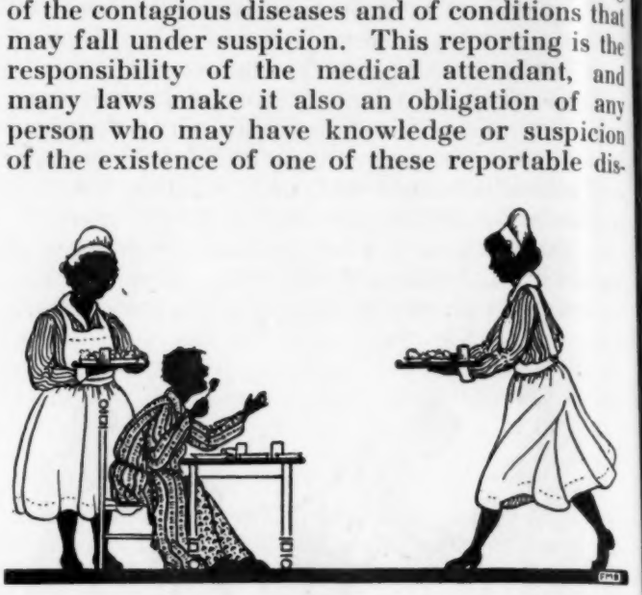
The difficulty is that once enacted into law, it is not always easy to modify the regulations in accordance with advancing knowledge. This difficulty is met in part by providing in the law only the authority to make rules, which is then delegated to the state board of health, the enactments of this body being given the force of statutory law when published in the same manner as laws would be published. Even so, there is lack of elasticity, and certain requirements remain in force long after they should have been abandoned. Fumigation, for example, is still required in some places, though long since scientifically discredited in favor of good old-fashioned cleanliness.

Must Control Early Stage of Disease

Two of the important principles of contagious disease control are difficult to put into the form of law. They are based on the fact that contagious diseases, contrary to commonly accepted belief, are most easily transmitted in their earliest stages and not during convalescence. This means that successful application of control measures must depend on putting them into effect early, often before definite diagnosis is possible. No law can accomplish such an object; it is attainable only by education.

Quarantine is a feeble weapon unless applied early in any given case. If the first days of a disease, when recognition is most difficult and sometimes is not possible, are the most dangerous to persons coming in contact, it follows that the earlier quarantine can be applied, the more nearly it will achieve its full effectiveness. Applied to carriers, suspected cases and exposed persons, it exhibits its greatest possible efficiency.

For these reasons health departments are bending their efforts to secure earlier reporting of the contagious diseases and of conditions that may fall under suspicion. This reporting is the responsibility of the medical attendant, and many laws make it also an obligation of any person who may have knowledge or suspicion of the existence of one of these reportable diseases. It is a lamentable fact that certain families so urgently desire to avoid quarantine, regardless of the dangers that such a course involves to the community, that they actually penalize their doctor in the performance of his duty by withdrawing their patronage from him when he reports a contagious disease in their home. This is a reprehensible practice and is not countenanced by people with any regard for their fellow men.



The clinical condition of the patient has little or no relation to the likelihood of spreading disease.

Reporting by persons other than doctors is not practiced as much as it should be, perhaps because it appears at first glance to be a form of tattling, which is naturally repugnant to most people. Health officers believe that those who so far disregard the welfare of their fellow citizens as to expose them to possible illness and death, to say nothing of inconvenience and expense, are not deserving of consideration, and that reporting of such persons is a community service by no means to be regarded as tattling. It all depends on the motive. If you report your neighbor for a violation of quarantine restrictions because you sincerely desire to protect your vicinity against danger, and if he has failed or refused to heed your warnings and requests, you have rendered a service; if you do so to get even for a real or fancied injury or for other malicious motive, you are no better than he.

Progressive health officers are pointing out today that means exist to abolish quarantine in at least two diseases—smallpox and diphtheria. The existence of sure, safe and convenient protection against them is sometimes advanced as

an argument for lifting all restrictions and putting the responsibility for their occurrence directly upon the community. This would be fine if it did not leave numbers of children at the mercy of parents who do not know or will not accept the facts concerning prevention of smallpox and diphtheria. We must go on using quarantine for the protection of these, but it remains true that two of the most common and most dangerous of the quarantinable diseases need no longer exist, and any one whose home is quarantined for one of them has got only what he asked for.

In other diseases in which quarantine remains the only protection, health officers are appealing for earlier opportunity to recognize cases and apply restrictive measures. To this end, and to encourage reporting, they maintain free diagnostic service which is available to physicians for consultation and which responds to reports made by public health nurses and nonmedical persons suspecting contagious disease and unable to make a diagnosis. No person should be without recognition of the malady that attacks him or his family, no matter how poor he may be. There is evidence of greater and increasing public enlightenment in this regard, in the growing number of cases referred on suspicion to these diagnostic services by doctors and laymen. Mothers now commonly call the health department and report illnesses in their own children, and more families are cheerfully or at least philosophically facing the inconveniences of quarantine out of regard for the public welfare.

It should be realized that quarantine is not a penalty, at least it is not intended as punishment of the quarantined family, though it certainly is a penalty that they must pay for lack of care on the part of some one else, frequently unidentified, in permitting a contagious disease to be spread. It is perhaps poor consolation to assure the quarantined family that their inconvenience will redound to the public good and that they are to be commended for their scrupulous observance of the requirements laid down for them. But they will have many questions to raise, some of which are well taken and must be answered.

Pepys stuck manfully to his job in the Navy office despite plague.

A mother demanded of me not so long ago why she and her family should submit to quarantine when her next door neighbor last winter had the same thing and was never quarantined. A little inquiry revealed that the neighbor had called a physician just once, and when the child had developed a rash the next morning, had telephoned the doctor that all was well and he need not come again. Thus she had evaded quarantine by concealing a case of scarlet fever. Quite obviously this underhanded practice on the part of one neighbor is not a good reason for allowing another to escape the necessary restrictions, but that is not always an easy matter to explain to a family that faces the inconvenience and heavy expense of a long quarantine. The time to correct such abuses as this is when they are occurring, by reporting the facts to the proper authorities; wrongs of this kind can never be righted by other wrongs.

Patients will often ask why it is that they must be quarantined when doctors and nurses and even clergymen are allowed to come and go. As far as doctors and nurses are concerned, the answer is that they have been trained to avoid the spreading of infection by careful observance of a technic which has been so thoroughly drilled into them that it becomes second nature. Clergymen must be admitted because the constitution of the United States guarantees to its citizens complete freedom in religious matters. These gentlemen, too, become accustomed to protecting themselves and through these precautions they protect the public. It should be said that contagious diseases are not carried about on clothing and other inanimate objects to any great extent, the main danger lying in and upon the body of the person. If the mouth and nose are covered and the hands carefully washed after handling the patient, little danger exists of spreading infection. At the same time, persons not trained in this technic unconsciously fail at many points to keep it in effect, and so they must be quarantined.

The most determined resistance to quarantine comes from those who do not feel that the person quarantined is ill. This is particularly true when exposed persons or carriers are placed under restriction. Most of them will cheerfully accept a short period of isolation, but as time goes on—which it all too often does in these cases—they become restive and impatient and increasingly difficult to hold. The reason for keeping quarantine on such persons is that the clinical condition of the patient has little or no relation to the likelihood of spreading disease. Perfectly well persons harboring the germs of diphtheria may be responsible for epidemics. Being themselves protected, they do not become ill, but they pass the infection around just as effectively —in fact, more so, because they are not retired from circulation as a sick person would be.

The same facts apply to convalescence. The patient may look and feel fine and have a wonderful appetite, while still constituting a source of infection. In many diseases, such as scarlet fever, we have as yet no practical method

of determining positively when infectiousness ceases. Then we are faced with the necessity of providing periods of isolation, based on observation and experience, which allow an ample margin of safety. If some of these inflict what appears to be unjustified hardship, that must be regarded as the penalty of ignorance. With more knowledge, we shall be enabled to exercise greater liberality.

Underlying all the objections to quarantine is one basic reaction, which we cannot dispute is well founded. Every one who is quarantined resents being the victim of some one else's carelessness. In this they find health officers in full agreement with them, for there is no doubt that much contagious disease—theoretically all contagious disease—is unnecessary and could be prevented by the exercise of a little more care and a little more consideration for our fellows.

And so we come finally to a kind of quarantine that remains at this time a sort of beautiful dream in which health workers indulge, though incidents which occur from time to time seem to indicate that it is not entirely a dream. The quarantine to which reference is made is self-imposed; "conscience quarantine" has been suggested as a name for it. This is the kind which we hope will some day be applied as a matter of course to each family by itself. It will not replace official quarantine, which will still have to exist, but it will be a powerful supplement to official quarantine, which will at one and the same time strengthen it and reduce the necessity for it.

"Conscience quarantine" will simply be the exercise of caution in exposing others to possible illness. It will cause the adult members, each for himself, and the mother for the children, to consider before mingling with others whether perhaps reasons exist why such association should be avoided. It will apply the principle that any illness may be contagious, and that our friends and the strangers we may meet are entitled to have us consider their welfare before exposing them. It will do away with the common practice, full of danger to patient as well as others, of letting time go by to "wait and see," meanwhile going about one's business as usual. It will put an end to gambling with human life and health by temporizing with dangerous contagious diseases.

It will ostracize the person who knowingly permits a communicable disease to be spread from him or from his home to another person or home. It will render socially unacceptable the inconsiderate, the cynically careless and the stubborn who refuse to accept what the scientific world knows to be true and what the intelligent lay world is rapidly learning, that every case of contagious disease is a possible death and that every case of contagious disease is the result of carelessness on the part of some one other than the poor, unfortunate victim of the disease.

The time will come when mothers will be proud to say that no case of contagious disease has ever gone out of their home to any other. When that time comes we shall be in control of communicable diseases, and signs on houses will be rare instead of common. Until that time comes, if you have children, you will never know on what day he will find you out, the quarantine officer who stops to tack a sign on your house.

Ewing Galloway

Examining children for contagious disease at the opening of a summer camp.

Physical Defects *and* Character

By Thurman B. Rice

III. Disfigurement and Deformity

IT IS most unfortunate that medical science has been unable to prevent or to cure a great many of the ills that beset us. Remarkable progress has been made but there remain and doubtless will remain a great many who must face the future with drastic physical handicaps. Since we have been unable to prevent the crippling effect of disease and accident upon the physical body we may well afford to give thought to means of preventing the much more crippling effect of such misfortunes upon the mind and the character. Particularly is it essential that parents of crippled, blind or deaf children should understand certain principles to the end that they may not make a bad matter worse.

With the modern diversification of education and industry it is possible for practically every person, no matter how badly mutilated, to make an honest and independent living provided he has a good and an unspoiled mind. The magazines are full of true stories concerning successful men and women who have won their places against fearful odds. Such being the case, the only defensible attitude toward the cripple is that requiring him to move under his own power and live by his own wits.

Blind children, for example, should be treated like other boys and girls in every particular, except that directly related to the sight. If they are disobedient, they should be corrected and spanked if necessary; if lazy, they should be taught by precept and example the excellent dictum of Captain John Smith—"Only those who work may eat." They should learn to play and to get about alone. It is better that the blind child bruise his shins and his head by bumping into things than to have his spirit bruised by the pernicious teaching that he can do nothing but be helpless. There are few useful things in this modern world that cannot be done perfectly well by a blind person provided he is not blind in spirit.

We have in mind a lad who has peculiar hands. His mother has taught him to keep his hands in his pockets or behind him. The poor chap started by having peculiar hands and at 16 years is peculiar all over. On the other hand, a girl with a deformed right hand has been taught to play the violin. She appears in public without the least hesitation and seems not in the least handicapped.

A young woman is slightly cross-eyed. Under no circumstances will she look another person in the face or permit more than a side view. She closes her eyes or holds her head down if compelled to face any one not an immediate member of the family. The disfiguring effect of her mental attitude is infinitely worse than that of moderately crossed eyes.

The cripple who is required to fend for himself will do much to compensate for his defect, as witness the exceptionally keen hearing and sense perception of the blind, the powerful arms and shoulders of those who use crutches, or the ability of the deaf to read lips. By using to its utmost the ability that he has he may even go beyond the accomplishments of the average person. Many men and women who have reached real distinction would have been unknown had it not been for some deficiency that forced them to compensate. We strongly suspect that Helen Keller with eyes and ears would have been a very ordinary woman, but without them she is a beam of hope and an inspiration to thousands of fellows in affliction and, indeed, to all of us.

If I had a child that was epileptic, I should tell him of St. Paul, of Julius Caesar, Alexander the Great, Napoleon, and Peter the Great, all of whom are supposed to have been epileptic. I

should not want him to copy all of the traits of some of these five immortals, but I would let him see that they were doers. I should tell the handicapped child that Edison is hard of hearing, that Beethoven was deaf, that Milton was blind and that Byron was club-footed. A stuttering child should know of Demosthenes; a homely child should hear of Socrates and Ben Franklin.

It is hard to be strict with an unfortunate child but we are all acquainted with the spoiled and pampered child who becomes utterly impossible as a result of being a cripple. I have in mind a boy of 14 with a spastic paralysis due to a birth injury. He was physically strong and became positively vicious. Other children ran from him as from a monster. He pulled hair, bit and scratched; he made grimaces and spit on folk; he was vulgar, obscene and profane. He had a good mind but a badly abused one. His life has been inexpressibly tragic since his mother died and left him to the none too tender mercies of persons who would have been delighted to be kind to a cripple but can scarcely endure a fiend.

The rest cure for tuberculosis has thoroughly established itself in medical practice, but the patient, the doctor and the family must be careful not to convert an independent, ambitious person who happens to be sick into a loafer who is well. It has often seemed that certain persons have been oversold on the rest cure business. As soon as possible, the arrested case or the "cured" patient must be induced to resume his former methods of living. It is worse to err in the overzealous application of the rest idea than to injure oneself physically in attempting to maintain an independent economic position.

The worst thing that can happen to most persons with moderately defective hearts is for them to suppose that they should live with the welfare of the heart constantly in mind. I have in mind a wealthy man who built an elevator in his home and otherwise drastically remodeled his house when he learned that his only daughter had a leaking heart valve. Never was the young woman permitted to climb steps or do anything except sit quietly and be waited on by servants and other members of the family. Of course, the girl is long since dead, though in the beginning the heart defect was not serious. What she needed was such exercise of the heart muscle as would cause it to compensate for the defect. Persons with leaky hearts can do most of the things that other persons can do if they will use judgment and seek occasional advice from their physician. They can climb steps, though there may be reason for moving slowly. There is nothing so disabling as the willingness to lie down and quit.

Indeed there is scarcely any physical disability that need render a person dependent provided he has a good, unspoiled mind, fair general health and the ambition to amount to something. We should treat these handicapped persons in such a way as will compel them to make the attempt to compensate.

SIMPLE LESSONS *in* *Human Anatomy*

By B. C. H. Harvey

LESSON XIV, CONT.

THE NERVOUS SYSTEM

FROM the anterior part of the cord and brain nerves grow out. They constitute the ventral roots of each of the thirty-one pairs of spinal nerves and the motor fibers which are present in all the twelve cranial nerves except the first, second and eighth—olfactory, optic and auditory. The eleventh and twelfth nerves are entirely motor.

The Motor Effectors

The dorsal neurons have their cell bodies just outside the cord in the ganglions (figs. 152 and 159). The ventral neurons have theirs inside the cord. They carry impulses out from the cord to the muscle cells and to the glands. These are the agents that produce all our activities. Whatever the intelligence department may learn about the outside world or about the state of our bodies all we can do about it is limited to these four lines of activity. But the muscle cells are very numerous. There are about 140,000 in one rather small muscle of the thigh, the sartorius. There are several billions in the striped muscles of the whole body and in addition there are millions of smooth muscle fibers in the intestines, blood vessels and the viscera, and many thousand special striped fibers in the heart. The glands are innumerable. The activities of all these individual agents are orderly and harmonious because the nerve stimuli that go out to them are orderly and harmonious. The executive department conducts the whole performance.

Each motor nerve consists of processes that grow out from groups of cells in the ventral horns of gray matter in the cord (fig. 159). In the brain stem such motor cell groups are called nuclei, and the position of these nuclei is shown in figure 177. It will be noted that all are ventral; that is, anterior. Some are nearer the midline than others. Those for nerves to the eye muscles, third, fourth and sixth, and to the tongue muscles—the twelfth—are closer to the midline than those for nerves to muscles and glands of the alimentary canal—the fifth, seventh, ninth, tenth and eleventh. Similarly in the spinal cord the cells for visceral muscles are in the lateral part of the anterior horns of gray matter, while those for skeletal muscles are nearer the midline.

The position of the nuclei of visceral motor nerves farther to the side corresponds with other peculiarities. The visceral muscles and those of the circulatory apparatus are made of plain fibers. Most glands are made either by the entoderm (lining of the gut) or by the ectoderm (epidermis). Plain muscle fibers and glands are concerned with slow vegetative activities like digestion and circulation, which go on in essentially the same way in all mammals. There is one inherited automatic action pattern in all alike, and it goes on unconsciously. It does not need our volition.

Two Kinds of Action

The skeletal muscles composed of striped fibers have very different functions. They act quickly and we are conscious of the motions they produce. They effect for us all the intentional movements of our bodies, variable according to circumstances and individuals. The groups of nerve cells governing these two kinds of action are in different positions in the cord and brain. But there is an even greater difference in the nervous control of them. The automatic action of viscera, glands and vessels is subject to little direct control by the brain and cord. It is controlled by another part of the nervous system—a separated subdivision of the executive department. It is the sympathetic nervous system (fig. 150), often called the automatic or autonomic nervous system because of its relative independence.

The nerve cells of this subdivision wander out from the cord and brain along the ventral motor roots and move during early embryonic life forward toward the gut. Some groups of them take up a position near the vertebral column on each side making the gangliated chain. Others wander farther toward the gut making ganglions near the aorta to form the solar plexus, renal plexus and other plexuses (fig. 178). Still others move all the way out to the gut and to the heart and take up a position within the walls of these organs.

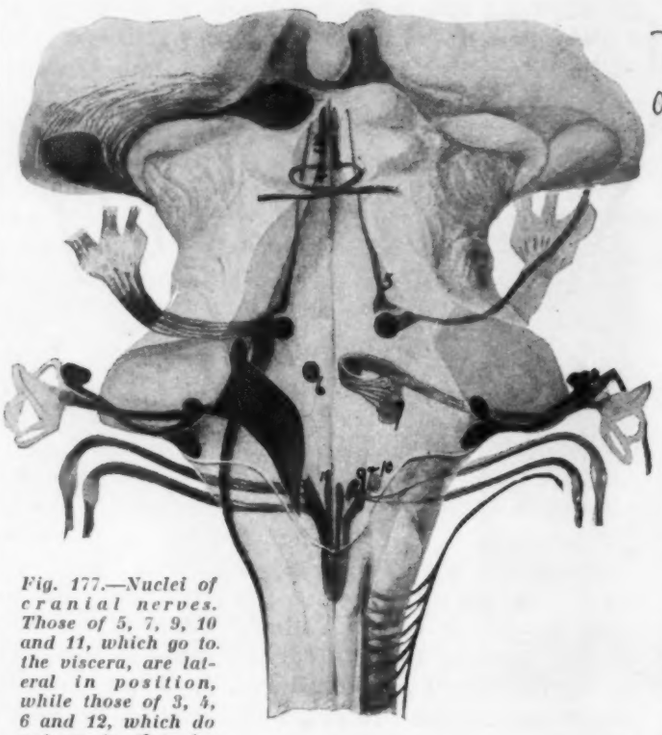


Fig. 177.—Nuclei of cranial nerves. Those of 5, 7, 9, 10 and 11, which go to the viscera, are lateral in position, while those of 3, 4, 6 and 12, which do not go to the viscera, are medial in position. (From Spalteholz' Human Anatomy, Herzil.)

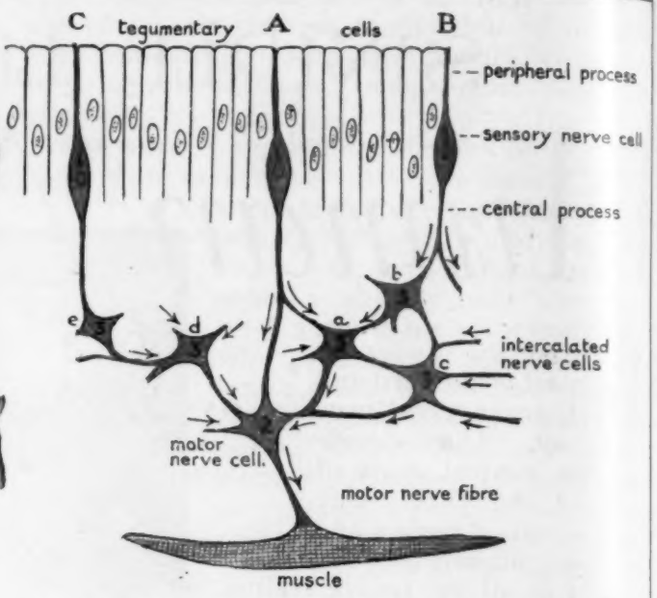


Fig. 179.—Diagram representing the essential features of the most primitive type of nervous system, as it exists in the hydras: 1, sensory neurons stimulated from outside the animal; 2, motor neurons, discharging their stimuli into muscle cells; 3, intermediate cells, in which the stimulus received from sensory cells may be arrested or intensified or diverted to other parts of the body. (From Cunningham's Anatomy, William Wood & Co.)

Sympathicus.

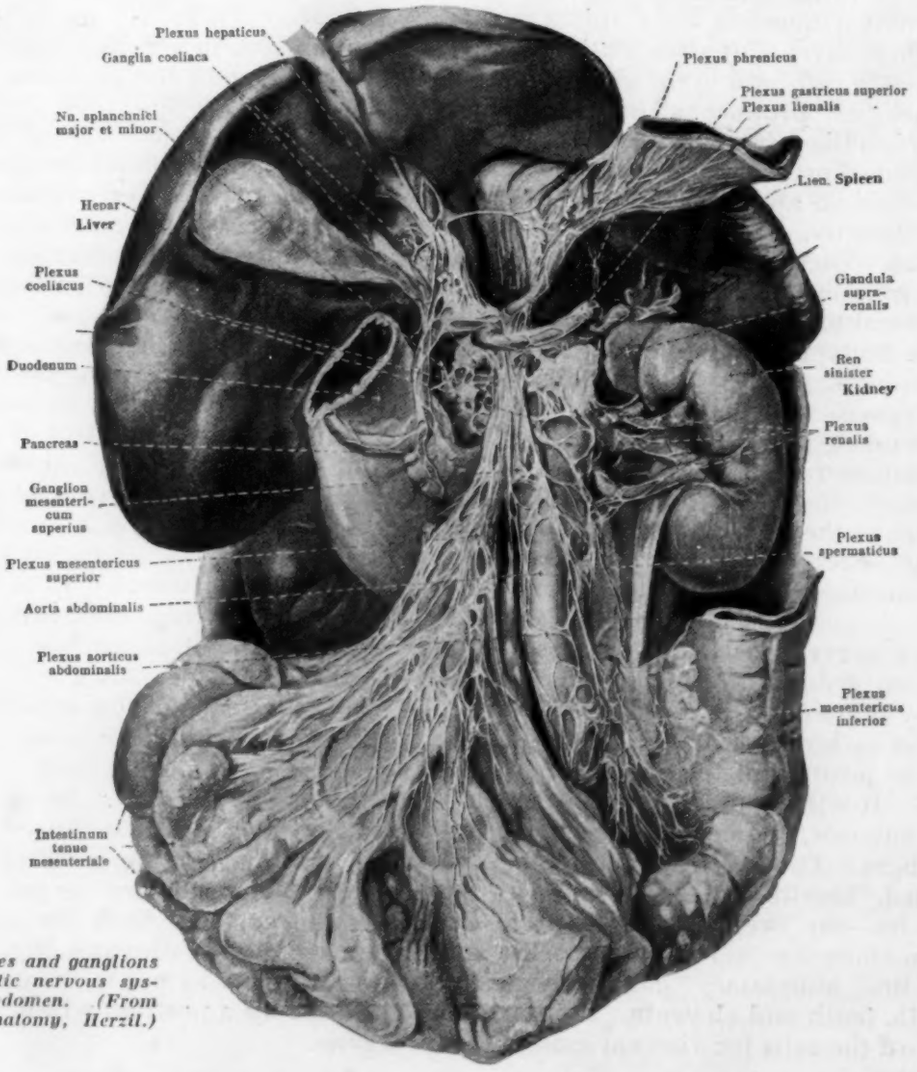


Fig. 178.—Plexuses and ganglions of the sympathetic nervous system in the abdomen. (From Spalteholz' Anatomy, Herzil.)

Thus the nerve cells directly controlling plain muscle fibers, heart muscle fibers and glands are scattered widely through the sympathetic subdivision. They direct the activities of the intestine, the uterus, spleen, kidneys, bladder and other viscera containing plain muscle or glands. They regulate the circulation of blood and lymph, sending fibers to all the arteries, veins and lymph vessels. They send fibers also to the skin regulating the sweat glands and the little muscles that make the hairs stand up. All this regulation is largely automatic; the touch-button mechanisms work themselves, little disturbed by the play up and down in the central nervous system of the unnumbered nerve impulses that adjust other bodily activities to the circumstances of the moment.

These cells tend to be accumulated in three main groups: the gangliated cord, the plexuses on the aorta and the plexuses in the walls of viscera. But there are other small ganglions between these groups. The gangliated cord (fig. 150) contains usually twenty-six ganglions on each side, of which four are in the head, three in the neck, eleven in the thorax, four in the abdomen and four in the pelvis. It is V-shaped and the lowest pelvic ganglion is in the midline and common to both right and left chains. These chains of ganglions are the center of structure of the sympathetic system. From them fibers go to the sympathetic plexuses and viscera and also to each of the spinal nerves and to many of the cranial nerves (3, 5, 7, 9, 10) and thus are carried to all parts where the structures they control are situated.

This sympathetic subdivision of the nervous system, though largely automatic, is subject to some interference by the cord and brain; our thinking can disturb our digestion. But there is not much provision for it; fibers go from the central system to the gangliated cord only in the thoracic and upper half of the lumbar regions, and most of these fibers are sensory, carrying in to the cord visceral sensations.

In the head and in the pelvis some nerves give branches directly to the viscera without going through the gangliated cord. These are sometimes called parasympathetic nerves. Their impulses are usually opposed to sympathetic motor impulses; thus the vagus nerve goes from the head to the stomach and stimulates its muscle to contract, whereas sympathetic impulses stop the contraction.

Discriminators, Rememberers, Integrators

Sensory and motor neurons are not by themselves enough to adjust the life of any animal to its environment. Even in the simplest forms of nervous system that exist in any animals there are also some intermediate cells. The sensory receiving neuron may indeed pass on its stimulus directly to a motor neuron, but in addition to that it stimulates some intermediate cells, for the sensory neuron is also connected with them (fig. 179). The action resulting from the transmission of a nervous impulse from a sensory neuron to a motor neuron is called a reflex. And reflex action is the kind of action characteristic of the nervous system. Such action always affects some intermediate cells and usually it involves many of them.

The simplest forms of the nervous system are found in the sea anemones and jelly-fish. Long ago, shortly after the dawn of animal life on the earth, these simple organisms presented the first stage of development of the master tissue. Figure 179 shows how some intermediate cells are interposed. Without intermediate cells it is clear that the animal could not react as a whole, and all animals do react as a whole. The motor mechanism—muscle cell—appeared first in animal evolution. The little mouths of sponges are narrowed by muscles, which respond to mechanical stretching. There are no nerve cells in sponges, and the reaction is very slow.

Then in several slightly higher forms, like the hydras, some superficial cells near the muscle become specialized as sensory cells. Others move in from the surface and become connected with the muscles as motor neurons. And, as figure 117 shows, still others take up an intermediate position. There has been much written about the simple nerve reflex consisting of one sensory neuron connecting directly and exclusively with one motor neuron extending to a muscle cell. The action of such a mechanism would be local, immediate, certain and unvarying. But it does not exist in nature—there are some intermediate cells, even in the most primitive nervous systems.

Intermediate Cells Give Us Our Intelligence

The simplest animals and the youngest human embryos that have nerves at all use their nervous systems for performing movements of the body as a whole. And as we follow the forms of animal life upward through the long series to the higher forms—toward those that can respond in more varied ways to slighter changes in the play of energies round them—the number of intermediate cells increases steadily, and they become more intricately connected. The human animal has most of all. There are more than 12,000 million cells in the human brain and most of them are intermediate cells.

These intermediate cells are interposed between the sensory and motor neurons. They are placed deeply in the body sheltered from all casual irritation. They have no processes extending out to the surface or to muscles or glands. But they are all linked up with one another, making one connected system which receives all sensations and gives off all motor impulses to muscles and to glands. This system extends from one end of the body to the other.

Passage of a nervous reflex through such a system insures great and significant modifications of it. The reflex is not local. A stimulus going in through one sensory neuron produces a reaction in the whole body, and thus the intermediate cells make out of many parts a single whole. They are integrators. They may intensify the reflex. The nervous energy of two neurons is of small amount, but many intermediate cells may discharge their energy in concentrated strength on a few muscle fibers or glands.

Furthermore, these intermediate cells combine the sensory stimuli from one sensory cell with those of all the others and permit of motor reactions appropriate to the sum of all information received about the environment or about the body's parts. They may prevent completion of the reflex or they may delay it. Through them complex movements are made possible involving many parts together or in harmonious sequence. They bring the two sides of bilaterally symmetrical animals into harmonious cooperation. They preserve the effects of sensation as memories. Some of them acquire consciousness.

The development of a nervous system containing intermediate cells is the most significant forward step in animal evolution. It made possible the development of memory, judgment and intelligence. Through these cells insight and foresight may be substituted in the higher animals and man for the at-sight reaction which is characteristic of lower forms.

The Use of the Spleen

By J. R. Earp

THE function of the spleen, a large organ in the left side of the abdomen, has been a puzzle to physiologists for a long time. Ever since the sixteenth century, when a spleen was first removed from a human being, it has been known that man can live quite well without a spleen. Observations made on persons who have had their spleens removed as a result of accident or in the treatment of disease show some temporary changes in the blood. The fact that the spleen is often greatly enlarged in certain diseases of the blood and in diseases like malaria that involve destruction of the red blood cells has suggested that the spleen may be responsible for removing from the circulation red blood cells that are no longer of use to the body.

Reservoir of Blood

Nobody was able to study what happens to the spleen during life until Professor Barcroft of Cambridge University discovered that the spleen can be brought outside the body and left outside without injury to the animal. It was found that large changes take place in the size of the dog's spleen under certain circumstances. For example, during exercise the spleen becomes much smaller. Evidently one of the functions of the spleen is to act as a sort of reservoir of blood: when the body needs more blood the spleen gets smaller and gives up blood to the circulation. Before any outsider can give a blood transfusion for shock, the spleen has already performed an effective transfusion inside the body. Dr. Barcroft discovered almost by accident that during pregnancy the spleen gives up much of its blood so that the mother dog may have enough for her puppies as well as for herself. He has also shown that the spleen becomes smaller under the influence of emotion. One may suppose that this is a part of the natural response of the body preparing it to take urgent action—a kind of foresight of exercise to come.

Emotion Reduces Its Size

The results of Professor Barcroft's latest experiments are reported in the following scientific language: "The smell, sound, sight or pursuance of a cat produces contraction of the spleen of a dog of suitable temperament." Dimple was the name of the dog used and his temperament was such that his desire to pursue any cat in the neighborhood was "rather, but not too strongly marked." A duster waved in front of his nose had no effect; but a similar duster that smelled of cat caused his spleen to contract to about two thirds of its normal size. When pussy was heard to mew in the next room, Dimple's spleen got still smaller. When he caught sight of the cat, his spleen got smaller still (nothing is said about the size of the cat's spleen, though we may hazard a guess that it was even smaller). Fifteen blissful seconds in pursuit of his traditional enemy reduced Dimple's spleen to its smallest possible bulk—about a quarter of its original size. "Smell, sound, sight and pursuance. . . . The degree of contraction," concludes Professor Barcroft, "is greater in the order of stimulus given."

Observing the interior of the eye by the direct use of the ophthalmoscope.

The Background of the Eye

By

James E. Lebensohn

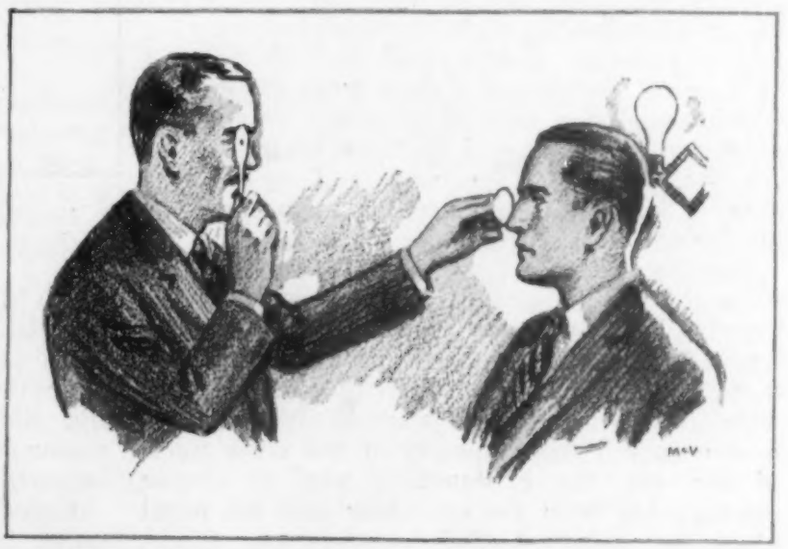
THE history of science illustrates the tremendous implications sometimes present in apparently insignificant phenomena. Gilbert considers the properties of rubbed amber, coins the term "electricity," and unconsciously inaugurates a new era; Watt contemplates the puffing tea kettle, and bequeaths steam power to mankind; Newton ponders over the falling apple, and evolves the laws of gravitation.

And just as steam engineering waited for a Watt, astronomy for a Newton, ophthalmic science had its Helmholtz to endow it with new life and new dominion. Myriads of sentient beings before Helmholtz had seen light flash from the eyes of animals and accepted this curious phenomenon as merely interesting. To Helmholtz, however, this flash meant a reflection of light from the background of the eye. Ah, if this illuminated background could be focused by one's own eye, the living interior of the organ of vision would be revealed!

Helmholtz, whose dominant interest was physiologic optics, solved the problem by fairly simple means. The perfected instrument became even simpler—a concave mirror to reflect the light into the observed eye having a peep-hole in its center through which looked the eye of the observer. In the original article that Helmholtz published in 1851 he predicted that by the aid of this instrument the alterations of the interior of the eye, which until then had been found in cadavers, would henceforth be recognized in the living. His prophecy has become more than true; his instrument, the ophthalmoscope, is the orb and scepter of ophthalmology.

The value of the ophthalmoscope was immediately recognized by Albrecht von Graefe, one of the great men of all time and at that period acknowledged as the leading eye specialist of the world. He exclaimed: "Helmholtz hat uns eine neue Welt erschlossen!"

Four years before Helmholtz, Charles Babbage, an English mathematician, had independently invented an ophthalmoscope, which he demonstrated to T. Wharton Jones, an ophthalmic surgeon. But Jones was not a von Graefe, and only realized the value of the instrument after Helmholtz's discovery had been universally acclaimed by ophthalmologists. Today it is indispensable.



Relative position of examiner and examined in indirect ophthalmoscopy.

When the ophthalmoscopic mirror is used at a meter's distance, no details of the background of the eye are visible, but a general red glow is seen, which is known as the fundus reflex. With the eye under the influence of belladonna, Cuignet noticed that this fundus reflex had variable characteristics, depending on whether the eye was farsighted, nearsighted or astigmatic. By the use of lenses the exact degree of refractive error could be determined. This simple procedure is still today the most reliable means at our command to determine what glasses, if any, are needed by the person examined. The perforated mirror used in this connection is called the retinoscope, costs but $1 or $2, and is more prized by the trained oculist than the vast array of imposing armamentaria, selling for hundreds of dollars, that have since been designed for the same purpose. Being purely objective, the method is as equally efficacious with the young, the illiterate, the deaf, and the dumb as with the most intelligent.

Clergy Opposed Glasses

It is interesting to note that members of the clergy were at first opposed to the introduction of spectacles. They considered this attempt to remove the disabilities that God had imposed upon the aged, an impertinence to the divine will. When glasses finally attained the approbation of the wealthy and the learned, the attitude of church dignitaries was completely reversed. As an emblem of scholarship, nose glasses were affected by every ecclesiastical worthy. Though glasses were invented in the thirteenth century, the artists of the fifteenth century, not to be lacking in respect, portrayed the apostles and the early Christian fathers with this adornment. Ghirlandajo, in 1480, painted St. Jerome working at a desk from the end of which dangled a pair of glasses. This detail gave rise to the legend that the learned saint was the inventor of spectacles and, as a consequence, St. Jerome became the patron saint of the spectacle makers' guild.

For the thirty-five centuries that intervened since the first record of medical thought—the Papyrus Ebers—to the advent of the ophthalmoscope, one of the mysteries of medicine was that many sightless eyes from their outward appearance seemed apparently normal. When blindness occurred from opacity of the clear parts of the eye the explanation was of course obvious, but with the eye clear and the pupil black the malady baffled investigation. Since, among the then understood causes of blindness, cataract was most common this condition was called black cataract.

But nowadays the ophthalmoscope clears the way—it shows what is behind that black pupil. We can see hemorrhage, exudate, atrophy of the optic nerve, glaucoma, tumor, or whatever it is that affects the perceptive tissues. These morbid processes diagnosed in time can often receive successful treatment. Certain tumors of the eye—glioma and melanosarcoma—not only affect vision, but their persistence endangers life itself.

When the physician with the aid of the ophthalmoscope looks through the transparent media of the eye, he has the unique opportunity—which is possible nowhere else in the body—directly to observe blood vessels and nerve

Hermann von Helmholtz, inventor of the ophthalmoscope, which reveals the eye's interior.

fibers in their active living state. It may not be surprising then that the eyeground examination gives at times the first intimation of serious systemic disease, such as focal infection, syphilis, diabetes, nephritis, arteriosclerosis, locomotor ataxia and other diseases of similar grave import.

Especially in disorders of the brain is the ophthalmoscope necessary for making the diagnosis. In certain situations the instrument is almost a cerebroscope. There is a disease—amaurotic family idiocy, which is fortunately rare—that generally afflicts several children of a family (nearly always Jewish families) and inevitably ends in early death. A cherry-red spot in the background of the eye revealed through the ophthalmoscope makes diagnosis of

this disease absolutely certain. In cases of suspected brain tumor, it is the swollen optic nerve head that often clinches the diagnosis. At this stage the patient may be without any visual disturbance, but only suitable intervention can forestall ensuing blindness and a fatal outcome.

Should the ophthalmoscope reveal no abnormality of structure, is there any more information that can be extracted from an examination of the eyeground? Yes, thanks to Bailliart, the physician can determine the blood pressure of the retinal arteries. The blood pressure varies in different parts of the body and is not always in the same proportion. The eye is much nearer the brain than the forelimb, and as a consequence data on the pressure of the central artery of the retina give a more definite idea of the cerebral circulation than it is possible to obtain from determinations made on the artery of the arm. The cerebral circulation may be affected by localized arteriosclerosis or by various conditions tending to increase intracranial tension. In all these circumstances, the circulation in the background of the eye reflects the cerebral conditions.

Allvar Gullstrand, authority on physiologic optics.

The finest ophthalmoscope yet developed is the creation of the Swedish scientist, Allvar Gullstrand, recipient of the Nobel prize in medicine for 1911, and the foremost living authority on physiologic optics. This apparatus is complicated and expensive, but gives a wonderfully clear image of the eyeground, magnified forty times. A binocular attachment can be used when a stereoscopic view of details is desired or when the examining oculist chooses to demonstrate certain findings to an associate. The latter use makes it invaluable from the teaching standpoint, and the apparatus is hence accorded an honored place in all ophthalmic clinics.

Utilizing the Gullstrand method of illumination, Nordenson perfected a camera for photographing the eyeground. This Nordenson camera is compact and can be used by any oculist in his consulting room. It permits accurate photographic detail, free from artistic limitations and interpretative bias. These photographs should be of inestimable scientific value in the study of the progress and retrogression of eyeground changes. As yet these photographic records are in black and white, but with the perfection of color photography we confidently look forward to beholding eventually the mystery of the eyeground translated to the film in all the beauty of its natural colors. That will be another significant day in the history of ophthalmology.

Richard K. Wood

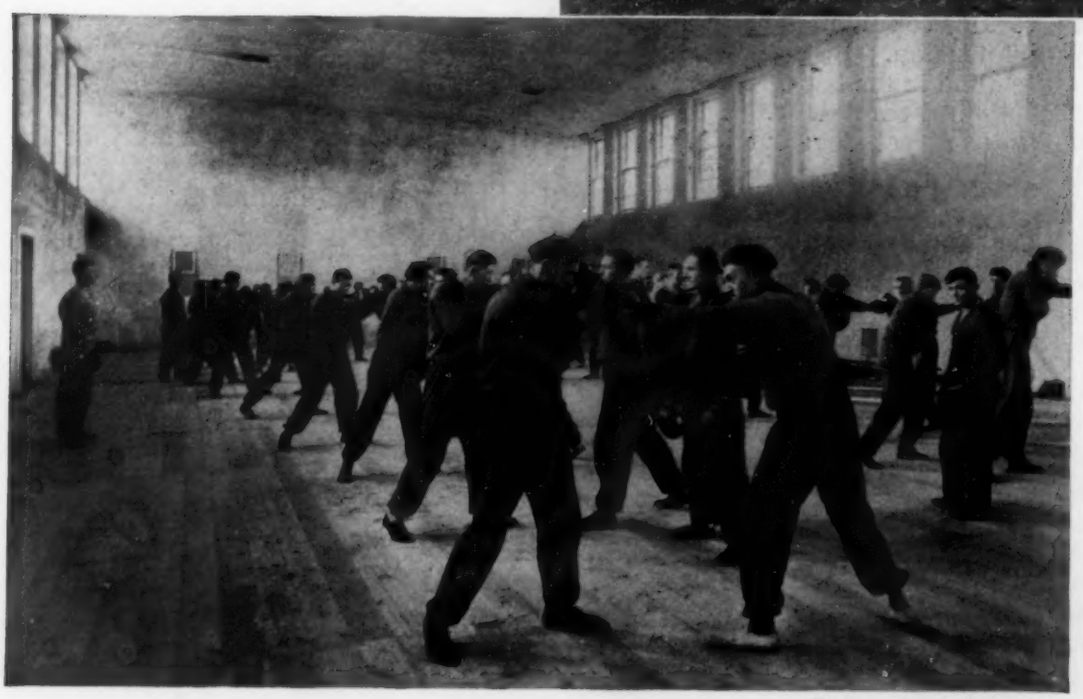
A PRETTY PAIR

There is a welcome back at camp for the boy or man who brings in beauties like these. What a tasty supper these bass will make! But gastronomic joys are only secondary to the thrill of the catch.

HOMAGE TO PASTEUR

Eternal debtors to that great man of science, Louis Pasteur, the International Association of Milk Dealers recently laid a wreath at the Pasteur monument, Chicago. Standing in front of the statue are Dr. M. H. Foster, senior surgeon of the Chicago Marine Hospital; F. D. Walmsley, president of the International Association; Dr. Morris Fishbein, editor of HYGEIA, and M. Sirven, deputy French consul.

Atwell Studio



Underwood and Underwood

CLASSES IN BOXING ARE POPULAR IN POLAND, as is seen by this photo from the Institute of Sports, Warsaw.

Underwood and Underwood

A COSMOPOLITAN GATHERING

Syrian, German, Dutch, Roumanian and Spaniard—these babies are representative of those who appear for regular inspection at American Child welfare stations. Monthly visits to the clinics keep them in the pink of condition.

WINS POSTER PRIZE

With a baby off a HYGEIA cover for her central figure, Eleanore Fryer, 9 years old, won the Chamber of Commerce poster contest for the stimulation of the use of dairy products in Grants Pass, Ore. Children in all grades up to the sixth competed. Two months after the educational campaign on dairy products started, Grants Pass stores reported a 50 per cent decrease in the sale of substitute dairy products.

A RETREAT FROM STORMS

Storm caves have been constructed near many school houses in Illinois, in which teachers and pupils can find a retreat in case of tornadoes or severe wind storms. Concrete is utilized in the construction, and the size of the storm cellar depends on the number of pupils and instructors in the school.

Underwood and Underwood

WHEN CHINESE GIRLS GO IN FOR ATHLETICS, they do it in the Occidental manner.

FIRE DRILL AT ENGLISH SCHOOL

School boys at Gloucester, England, have weekly fire drills directed by the city fire department. They are taught life-saving and the use of simple fire-fighting apparatus.

WORM'S EYE VIEW OF BRITISH AVIATORS

Members of the physical school of training of the Royal Air Force of Great Britain go through their daily drill. As in the United States, the standard of physical fitness for aviators is rigid.

All photos by International

AQUATIC ARCHERY

Shooting arrows at a floating target is a recent California fad. An open plunge permits the archers to absorb plenty of ultraviolet during their sport.

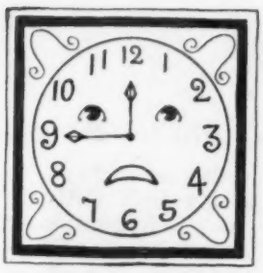
SWEDISH SHARPSHOOTER

The winner of the first prise in the Swedish National Rifle Shooting Contest for Women held at Stockholm was Miss Maj Lagergren. Miss Lagergren was photographed immediately after winning the event.

FANTASTIC BOWLING

A weird bowler is this one on the wall of the bowling alley about to let go his ball. He is, of course, a shadow bowler and not a futuristic painting.

All photos by Underwood and Underwood



The Grandfather Clock Speaks His Mind

By

Ida Spaeth

LITTLE Jack was safe in bed and had just settled himself for a good night's rest when suddenly he heard a great noise outside his door. He lay very still listening, when all at once who should turn the knob and walk into his room but the old Grandfather Clock. In he marched, looking very sour and glum, until he reached the foot of Jack's little white bed.

Jack was too surprised for a moment to say or do a thing. He just stared back into the face of the Grandfather Clock and wondered what would happen next. For who can tell what is going to happen when an old clock starts moving about in this strange fashion?

Suddenly the old Clock stretched forth his long hand and pulled Jack right out of bed and started determinedly with him toward the door.

"We-ll, wh-at, whe-re," stammered Jack when he finally found his voice.

"Ding dong, come along," snapped the big Clock nervously, as he opened the door and started to descend the stairs, "I want to have a talk with you."

So down the stairs they hurried, through the living room, the dining room, the kitchen and out the back door. They never stopped a moment till they reached the orchard at the back of the house.

"Now!" said the old Grandfather Clock dismally as they halted under an apple tree, "I have brought you out here to tell you that I am going to stop running. I don't mean to run a single day longer."

"Going to stop running?" asked Jack, too astonished to trust his own ears. "Going to stop running?"

"Yes, I'm going to stop running. I've ticked and tocked for your family for a good many years, so long I can't even remember when I first began. When you were a tiny baby I used to tell your mother when it was time to feed you, time for your nap, time for your bath, time to take you out doors. In those happy days there was a time for everything and everything had its own time. But now things are different. Times have changed, times have changed," sighed the old Clock mournfully.

"But why are you going to stop running," interrupted Jack a little anxiously.

"That's just what I've come to tell you. You see, I'm really not useful any more. No one pays attention to me. I tick away the seconds and the hours, but it is of no use. I move my big hand around the circle every hour and my little one every twelve hours, but no one takes the slightest notice. I ring the old chimes day and night, hour by hour, winter and summer, but all my work is for nothing. I'm of no more use than that old hitching post out in front. Times have changed, times have changed," added the old Clock sadly.

"But I pay attention to you, Clock."

Who should walk into the room but old Grandfather Clock. He was looking very sour and very glum.

"No, no, Jack, you pay attention to me least of all. I strike seven times in the morning and instead of getting up you turn over for another nap. When you finally get up it is rush, rush, hurry, hurry. No time for this and no time for that. You barely have time to get washed before you have to rush off to school. It makes me sick to see the way you leave half your breakfast every morning. All that nice fruit and milk and oatmeal and toast goes to waste. Your breakfast is the most important meal in the day, and yet you haven't time to stop and eat a good breakfast. You've even complained because I don't run more slowly. It is of no use. I've decided I may as well stop."

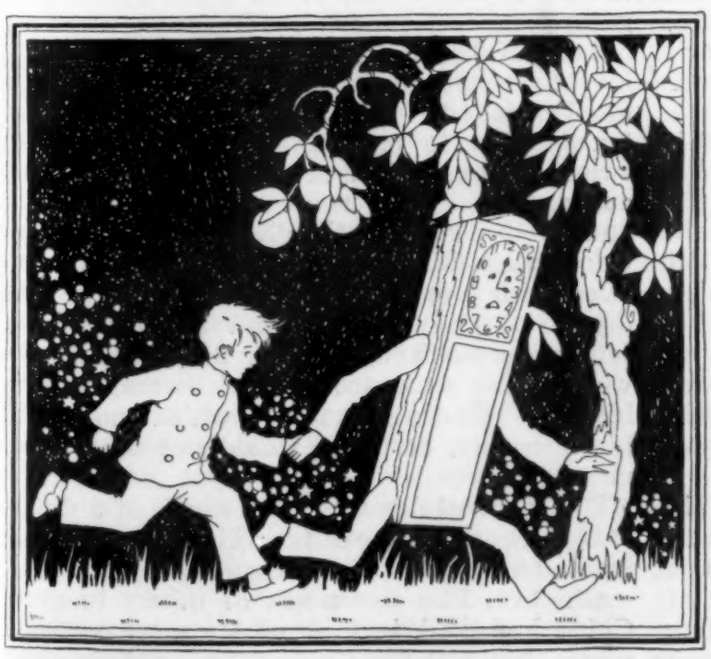
"But how will we ever get on without a clock?" cried Jack anxiously.

But the old Grandfather Clock did not stop to answer. He had already picked up his pendulum and started back to his place on the stairs.

The next morning Jack heard his mother call as usual, "Jack, Jack, hurry, hurry. You'll be late for school."

For the first time in many weeks Jack hurried out of bed and into his clothes. When he was washed and dressed and had come down for breakfast, his mother said, "I don't know what has got into the old clock. It has stopped running. I haven't any idea what time it is. You had better hurry with your breakfast. I'm afraid you'll be late for school.

"So the old clock stopped running after all. I thought I only dreamed it," said Jack, as he hurried into his wraps and rushed off to school having eaten scarcely any breakfast at all.



They never stopped till they reached the orchard.

Some mornings Jack would get to school before the gates were opened and would have to wait alone.

Poor Jack got to school long after the last bell rang and was marked tardy. This was the first black mark against his name and he felt bad indeed. But things went from bad to worse. He was getting low marks in school because he did not know his lessons, and it began to look as if he would not pass to the next grade at the end of the term. Some mornings he would get up very early and get to school before the gates opened, to wait alone until the janitor came.

I really do not know what would have happened if Jack's father had not decided to do something. One day he got some oil and poured it inside the old clock and swung the pendulum. He shook the old Time Keeper vigorously.

Suddenly the old clock began to "tick tock, tick tock, tick tock." And, wonder of wonders, it began to run again.

Jack gets up promptly at 7 o'clock now. He pays attention when the old Grandfather Clock rings seven bells in the morning. He has plenty of time to attend to his toilet needs and time to sit down and eat a hearty breakfast before he starts off to school. He is getting well up to the front of his class again, and I am sure he will have no trouble passing to the next grade.

The old Grandfather Clock smiles cheerfully when Jack passes through the hall. I suppose the old Clock is happy once more because he has found out that he is very, very useful and Jack pays attention to him now.

As a last resort, they got a bright green dragon.

Gin Lee

By
Jane Bateman

THERE was wailing in the house of Lieu Ting Tung, in Tientsin, North China. Gin Lee, Lieu Ting Tung's only son, was very sick. He was obsessed with an awful thirst and was pitifully weak. Lieu Ting Tung sent for Ju Chin Chin, the best Chinese doctor in Tientsin. Ju Chin Chin came, with pomp and beating of drums. He sent Lieu Ting Tung, Che Cha, his wife, Mu Singa, his daughter, and all the servants out of the house. He sat a long time by the side of the little Gin Lee, mumbling strange incantations. Then he took the little boy's wooden pillow and put it under his feet.

Outside, Lieu Ting Tung was thinking that it would not have been so bad if it had been his daughter instead of his son who had fallen ill.

When Ju Chin Chin finally came out, he said that he would come again the next day, and that Gin Lee ought to be well by then; the evil spirit would most certainly be scared away by his magic.

All day drums beat at the door and flutes shrieked around the house, while poor little Gin Lee tossed on his hard Chinese bed and cried for water.

The next day he was worse, and Ju Chin Chin placed a little black spot on his forehead and made more strange noises over him. But Gin Lee grew worse and worse. Many doctors of Tientsin came to see him. One put bleeding cups on his shoulders; one stuck little green thorns in his wrists; another fastened charms to his ears; and still another tied a cord with dragons on it tight around his neck; and one thrust a needle with medicine on it into his tongue. They all dosed him over and over again with different concoctions, such as rice flour mixed with crushed grasshoppers, juice of dock weed, powdered deer-horn, and ginger syrup that was rich with sugar.

But, strange to say, with all their magic cures, little Gin Lee became weaker and still more ill. Then the doctors of Tientsin came with masks on their faces and painted ostrich feathers around their waists to dance magic dances around the sick boy. But that, too, failed.

Lieu Ting Tung was willing to pay anything to save his only son; so, as a last resort, they got a dragon, not the Great Dragon of the City, but one of the smaller ones. It was 30 feet long, bright green, had an enormous head, and jaws filled with red feelers and white teeth. It took twenty men to manipulate it. It came and swarmed and writhed around the house, yelling and capering. It even came into the courtyard and crawled through the door to Gin Lee. And through all this Gin Lee lay, in a small room filled with joss fumes, crying for water. The dragon stayed all day, and the little boy's father was much encouraged. Surely the dragon would chase away the evil spirits that were in his son. The dragon's magic, which had helped his ancestors, certainly would not desert him now.

But the next day there was music of a different kind at the house of Lieu Ting Tung, wailing inside and mournful music outside.

Gin Lee, like thousands of others in great China had died, in spite of the most powerful magic, but still the Chinese had just as much faith as ever in their dragons.

and David

In Tientsin and Chicago

After a few weeks in the hospital, David went home.

II

In Chicago, U. S. A., little David Scott had just asked his mother for another drink of water.

"Thirsty again?" she said. "Why, Davey, you're thirsty all the time it seems to me."

When Mr. Scott came home to lunch, she told him about it.

"Will, I'm getting worried about David; he seems lackadaisical and tired, and he is terribly thirsty all the time. And he has a voracious appetite, yet he's losing weight. And his lips are so red. What do you think?"

Mr. Scott listened gravely.

"We shall go to see the doctor this afternoon," he said. "We can't let anything happen to our Davey."

That afternoon David stared with round eyes at all the strange things in Dr. Forrest's neat, clean, white-enameled office.

Dr. Forrest listened to his heart and examined his lungs. Then he asked for a sample of the little boy's urine. It was sent to the chemical laboratory and analyzed. The next day the doctor reported "quite a lot of sugar" to the now really worried parents. He then asked for a sample of David's blood. That, in turn, was tested in the laboratory. The doctor subjected David to many tests and his parents to many questions. Simple alimentary glucosuria, emotional glucosuria, a certain organic disease of the brain, renal glucosuria and diabetes were all carefully considered. The final verdict was diabetes—the disease in which sugar is not utilized but passes out through the urine.

David was sent at once to the hospital, and there put to bed. Insulin injections were begun right away, and he was put on a diet. After even just a few days, the treatment began to show; David was tired of being in bed and wanted something livelier. After a few weeks he went home, although he still spent a few minutes each day with the doctor having insulin treatments.

The natural insulin, secreted by the islands of Langerhans, a ductless portion of the pancreas, helps to make energy in the muscles by burning sugar. When the sugar is not burned, it piles up in the blood and has to be got rid of by the kidneys. When the islands of Langerhans become injured or diseased, they secrete little or no natural insulin, so the combustion of sugar is not controlled, glucose appears in increased amounts in both blood and urine, and the body gets no value from it. Therefore, the insulin is supplied to diabetic patients artificially by injections each day.

The antidiabetic hormone was first isolated from the pancreas of a dog by Dr. F. G. Banting. Now it is made from the glands of hogs and cattle. The extraction of the preparation from minced pancreas is done with acetone or methyl and ethyl alcohol. The insulin is isolated from this solution by the isoelectric method. It took thirty-nine years and dozens of chemists to figure this all out. Its doses now had to be suited to David's needs, which his doctor carefully studied.

David had also a special diet that chemists and doctors had worked for years to arrange. All his food had to be weighed and was, of course, very limited in carbohydrates. The amount of the carbohydrates was limited only by the amount of insulin injected. He took

enough food to keep him just under the normal weight for his age. The proteins were relatively low in comparison to body needs. The rest of the calories were supplied by fat.

Hypoglycemia and acidosis had to be guarded against, also. The former was produced once by a slight overdose of insulin. David became unconscious, and his pulse was beating feebly, about thirty-seven beats to the minute. Dr. Forrest at once injected a solution of glucose into a vein of his arm, and David was soon back to normal.

The neighbor's little boy had tuberculosis, and David was kept zealously away from him, because children with diabetes—or grown persons either—have small resistance to that disease.

In a year, with slowly reduced injections and a very strict diet, David was completely cured.

In Chicago, Mr. and Mrs. Scott were saying, "Isn't it grand how our Davey has picked up and taken such an interest in things; he's learning to swim and skate, and is doing so well in the first grade at school that they may put him into the second in the middle of the year. Oh, how thankful we are that this had all been worked out before David became ill! Wouldn't it have been awful if we had been living in China or in Africa!"

And in Tientsin, Lieu Ting Tung sat disconsolate, because there would be no one after him to worship his ancestors.

The Cold Brownies' Home

THE cold brownies sat in a row on the foot of Dick's bed. Most of them were feeling rather sad.

It had been many days since they had had a chance to give any one a cold, and if they could not find a home in some one's lungs they were going to die.

"We may as well leave the place," said one old cold brownie as he rubbed his nose with his dirty, sticky arm. "There is no one living here that we can give a cold to."

"Why don't we go to Baby Sue's room? She is so small she'll take cold easily."

"Not a chance in the world," growled the old brownie. "Her mother gives her a bath in the sun every day and plenty of milk to drink. That keeps her so healthy we could never give her one."

"What about father?" suggested another.

"Oh, we got started with him last week but he took so many walks in the fresh air that we had to leave him."

"Any use trying mother?" said a tiny brownie.

"Not a bit. Mother is so very particular that she stays away from any one who gets a cold."

"Might as well hunt another place," said the oldest brownie.

But just then something happened.

Mother came into the room with Dick. She sounded as if she might be scolding him.

"You should have never played out all afternoon in the rain with your feet wet. Now I'm sure you will be sick with a cold. Take off those damp clothes and get right into bed.

When the brownies heard this, they rubbed their sticky sides and laughed with glee.

Dick was scarcely in bed when the brownies perched around him ready to crawl down his throat with every breath he took. Deep down into his lungs they went.

When Baby Sue toddled into the room, the old brownie gave an order.

"Tickle Dick's nose. Perhaps we can make him sneeze. Then we may be able to give Baby Sue a cold, too."

They tickled Dick's nose so hard that he gave a great big sneeze and right away they were sorry, for he held his handkerchief so closely over his nose that he caught all of the cold brownies in it. They tried as hard as they could to reach Baby Sue but they could not get loose.

Just then mother came back into the room with a tall glass of orange juice for Dick. Straight to the window she went and pushed it open. The fresh air fairies came rushing in and right down to the deep corners of Dick's lungs they went. They chased the cold brownies right back out again.

"Let us leave this place at once," said the oldest brownie. "Come on over to Barry's. They are not so careful about sunshine, fresh air and handkerchiefs over there. We shall not have any trouble in living in that place. Come on, gang."

—INEZ W. GRIMES.

New Books *on* Health

Reviewed by
Morris Fishbein, M.D.
and Others

PERSONAL HYGIENE FOR NURSES

By Seneca Egbert, M.D., Dr.P.H. Cloth. Price, $2.50. Pp. 347, with 29 illustrations. F. A. Davis Company, Philadelphia, 1930.

BECAUSE of her contacts with disease the question of personal hygiene for the nurse is more serious than for the average individual. Moreover, there exists the possibility that the nurse may serve as a guide to preventive medicine and good health for the people with whom she comes in contact, provided that she is herself properly informed on these subjects.

With these ideas in mind Dr. Seneca Egbert prepared the textbook here reviewed. His style is the staid, matter-of-fact method of discussion that has marked medical literature for many years. He has collected a great many fundamental facts and has arranged them under suitable headings. In many chapters the discussions are exceedingly technical—so much so as to make it difficult for the nurse to follow and quite certainly hard for the average reader.

Each of the chapters is followed by review questions which will serve as a stimulus to the nurse for the seeking of further knowledge. A revision of this work with a view to greater popularization would give it a much wider appeal.

TRACK ATHLETICS AND CROSS COUNTRY

By Lloyd W. Olds, M.S. Cloth. Pp. 154. Price $2. A. S. Barnes and Company, New York, 1930.

MOST of this volume is taken up with detailed instructions covering the technic, or form, of competitive track athletics. Descriptions are aided by pen sketches of famous athletes in action. The author draws attention to faults to be avoided. He has for eight years been director for track athletics and professor in the physical education department of a state normal school. His pupils have an enviable record for athletic honors.

The need of conservation of health in competitive activities is emphasized. Mr. Olds is in a position to advise well concerning the type of men to use for the various events and the generalship needed in handling them.

Some objections have been raised to the overstrenuousness of high school athletics. Mr. Olds considers sensible physical training and conditioning of the greatest importance. Using cross country running as a basis of exhaustive physical effort, he conducted investigations on the physiologic effects of athletics on high school boys. He concluded that they are not too severe and do not injure health. About 50 per cent of the students were overworked owing to the lack of supervision of the coach or to duties outside of school.

Instructions are given about diet, staleness, bathing, the effects of smoking, and how to massage. The commoner injuries and their treatment have their place in the book and special attention is given to the subjects of sprained ankles, pulled tendons and sore feet. A standard weekly work schedule is included for each chapter. Athletes and coaches alike will find the information concise and helpful in physical building for efficiency.

GROWING STRAIGHT

By Maud Smith Williams. Cloth. Pp. 137. Price $2. A. S. Barnes and Company, New York, 1930.

MORAL and mental excellence depends on proper physical culture. The superb physical development of the Indian is supposedly due to his particular system of exercises. The author studied the scientific features of this method which, she says, is the best in the world. She has detailed 113 exercises from which a choice can be made to insure health and long life for any one. She tells how muscle stretching is used to acquire poise, grace and balance. She describes certain exercises to enable one to grow straight, to create flexibility of the spine and joints, to produce long pliable muscles and easy relaxation. The secrets of the aborigines' tremendous endurance are given in the "seven rules of life."

All the movements in the exercises coordinate with music and one may pick from the list exercises to develop certain sets of muscles. Drawings are used freely to simplify instruction.

The application of the Indian method is featured especially to overcome the physical shortcomings of the modern sedentarian.

OPEN AIR INSTITUTIONS FOR CHILDREN

Reprinted from the Proceedings of the International Congress on Child Welfare, Paris, July, 1928. Cloth. Pp. 107. The Elizabeth McCormick Memorial Fund, Chicago.

ALL agencies for health betterment are nowadays directing especial attention to youth. The comparative high mortality among infants and the fact that organic disease in many adults had the foundation laid in childhood constitute a field which science is gradually overcoming. One important phase of child welfare is the open air school. The conditions and practices of ten countries are now incorporated in this published report. It covers the educational field, medical care, vacation colonies and hygiene of the school child. In this survey the problem of bedfast sick children was not considered. Only the condition of delicate children (most of them with latent tuberculosis) needing special medical supervision and that of the child whose good health must be maintained are dealt with.

The report states that in the United States 254 cities have 1,006 open air classrooms and schools. In New York City alone over 12,000 children attend these institutions. Suggestions are given for recruiting the children for open air institutions, the location of buildings, methods of hygienic care and diet, with special attention to heliotherapy or sunlight treatment.

Among those who received medical attention and the open air, a definite change was obvious after two months. Particular attention is also given to the construction and operation of schools for well children. Special reports are included on the open air schools of various nations and vacation colonies. The idea is developing in every country as fast as possible. The book shows how living in the open air and sunshine encourages the children to study with all the more profit, since, being no longer enclosed between the four walls of the schoolroom, they work with greater pleasure and bring to their tasks more attentive zeal and more personality. Open air institutions simply emphasize health in our educational scheme and utilize the advantages of sunlight and fresh air. The appeal is chiefly to welfare workers.

HEALTH *and the* SCHOOL

Edited by
J. Mace Andress, Ph.D.
67 Clyde Street, Newtonville, Mass.

New Educational Theories and Practices in Connection with the Weighing and Measuring of Children

IT HAS become popular for speakers at high school and college commencements to indicate how rapidly we are progressing in science and to point to the changes that have taken place in scientific beliefs since they themselves graduated. Recently such a speaker in referring to physics and chemistry said that practically every scientific belief that was taught him by his professors about matter had to be restated now in the light of newer knowledge. This is somewhat disconcerting to us poor mortals who are seeking for that which is eternal—true today, tomorrow and forever more—yet in this triumphant march of practical science error slowly gives way to truth. There is always something that endures. As Emerson said, "When half gods die the gods appear."

Must Face New Facts

This change in theory and practice in hygiene has been as marked as in any field of science, and we must now face a new body of facts that will compel us to restate some theories and organize new procedures in practice.

When the new health education began to get under way shortly after the World War the idea that by weighing and measuring children we could obtain a fair index of their state of health was eagerly accepted. This procedure had at least two virtues. It was easy to get the facts, and the tables supplied by various organizations enabled the school teacher, physician or nurse to interpret the results. If a child was a certain per cent below the average weight for his height and age he was to be regarded as malnourished. The aim was to get every child up to this average weight. If children were a certain per cent above the average weight they were supposed to have an advantage, but if the weight was beyond a certain limit efforts were made to reduce the weight.

Schools began to teach that children could control their own weight by eating the proper kind and amount of food and observing the health rules. Often children were weighed and measured and tagged accordingly. If they were 10 per cent or more below average weight they were given red tags. Those in the intervening zone up to average weight had blue tags and those above white. Sometimes it happened that those children who had been brought up most carefully in their homes were given the impression of failure, while others who violated almost every health rule were up to standard weight.

Flaws in System Appear

The editor of this department heard a director of health education say to a group of children in a classroom that the red tag was a danger tag. Often the child's sense of failure was intensified by records placed on the blackboard or on the walls. These tables showed just where every child stood in the scheme, whether he was red, white or blue. After weighing and measuring day children who were still reds, although they had tried hard to bring up their weight by drinking milk, eating oatmeal and observing the health rules, wept in their disappointment. Mothers were upset over the failures, which they were inclined to think were due to their own ignorance or carelessness. Often pupils had a sense of failure or success as the result of the working of forces over which they had no control. One of the most fundamental laws of mental hygiene, that children should be made conscious of success, was violated. Weighing and measuring and its interpretation tended to become dogmatic, although softened somewhat by sympathetic teachers and supervisors.

Although the best authorities in pediatrics emphasized that gain rather than the attaining of a particular weight was important, that the child should be free from physical defects in order to gain, and that the final judgement in regard to malnutrition should always be held in abeyance for the physical examination by the doctor, these points were commonly disregarded.

Results Chiefly Good

In spite of some of the rather obvious defects in the plan of measuring and weighing children, the educational procedure was usually successful. There was renewed interest in the physical welfare of children and the inculcation of health habits. Weighing and measuring became the center of health teaching.

Meanwhile a critical attitude began to develop. It was found that the standard height and weight tables failed to identify many undernourished children. In some cases even as many as 75 per cent of children presenting unmistakable signs of malnutrition would have been missed through the use of an accepted height and weight table. Children up to standard weight were found malnourished. Some children in the red groups (the number was relatively small) were frequently judged by physicians to be well nourished. It was clear that some children and parents had a false sense of security while others were alarmed without due reason. Such deficiencies in theory and method cried out loudly for a reexamination of the basis of nutritional work among children.

In this crisis the American Child Health Association, which has done so much for the school children of America, undertook to investigate

selected aspects of nutritional status. The results of these researches have begun to appear in monographs, which indicate that there must be a marked change in our theories and practices concerning weighing and measuring.

First of all, the use of weight records for diagnostic purposes is limited. Weight is an unreliable index of malnutrition. The classification of children on this basis is therefore unsound and unwise. The selection of those who are malnourished should be made only on the recommendation of a physician.

Second, it is unscientific and unfair to regard average weight as the goal for all children or for an individual child. Therefore, the setting up of all standards for individual school and community achievement in health based on the average normal weight for height and age as a goal item should be discontinued.

Third, it is desirable for teachers and administrators to keep continuous records of height and weight if trends are watched rather than the relation of the child's height and weight at any time to that of the average height and weight for age. If there is continued loss of weight or cessation of gain, it should be brought to the attention of parents so that professional advice may be secured.

Fourth, weighing and measuring as an educational device should be continued, but the idea of a set goal for every child should be discontinued. A child's weight depends largely on his skeletal build including width of hips and width and depth of chest, as well as his height. Emphasis should be put on the child's individual gain and not on underweight or overweight status. Charts, graphs and classroom material should take all these facts into consideration.

The American Child Health Association expects, later in the year, to have available new tables that will show girths and subcutaneous tissue for different skeletal measurements at different ages. These tables will not be recommended for general use until the methods of measurement on which they are based have been submitted to the further test of experience by those who can try out their practicability in schools and other situations. These new measurements classify children "in relation to their peers in skeletal build."

These far-reaching investigations emphasize the need of the physician's judgment in determining malnutrition. Weighing and measuring should still continue, and gain in weight should ordinarily be encouraged. The concept of average weight needs to be discarded.

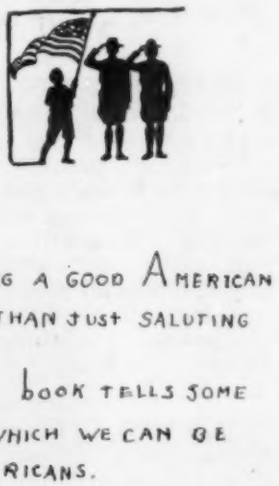
TEACHING HEALTH

(In this column will be published each month concrete examples of good health teaching. Teachers are invited to send in contributions not exceeding 600 words and preferably less to the editor of this department. Illustrations of the actual work of children will be welcomed. Contributions accepted will be paid for but no manuscripts will be returned.)

GOOD AMERICANS, GOOD HEALTH

MY CLASS was keeping the good health rules and was checking them each morning, but I felt the good health game might be entered into with more enthusiasm. Therefore, one morning I told the class about a school boy who was to take the part of a Good American in a play to be presented for the entertainment of the mothers and fathers.

This boy was very proud and had his part well learned, but just



Title page of Good American Booklet made by junior high school pupils in an interesting project.

the day before the play was to be given the boy was taken ill (perhaps because he had never been told about the health rules). For several days he lay in bed and took bad tasting medicine and, of course, did not have very good things to eat. However, none of these grieved him nearly so much as not being able to take the hero's part in the play.

When he returned to school, he was telling his teacher how disappointed he was to have to lie there in bed instead of being the Good American. She was understanding and felt sorry for the boy. During their conversation they talked about what it meant to be a really good American. John saw that to be the best American possible he had to be well, because it is not easy to be of service in any way when one is ill. John then began to ask how any one could help being sick. Miss Jones told him about the good health rules. John's interest was running high by this time. He wanted to organize Good Health groups and make booklets explaining these rules. The queer part of it was, John and his schoolmates did not call these booklets Good Health Booklets but Good American Booklets.

My class had caught the spirit and they, too, begged to make Good American Booklets. One child said they had just been doing some papering at home and they had part of a roll of heavy oatmeal paper that would make good covers for all the booklets. Another child said her mother had just entertained the D. A. R. and she had a lot of narrow red, white and blue ribbon, which had been used in decorating, and which could be used to tie our booklets. A few cents supplied a little patriotic seal for each booklet cover.

The necessary things were at hand the next morning, and we were ready to begin. Never was the paper cutter used with greater accuracy than by the two boys who cut the covers for all. Another group counted out the sheets of paper and placed them in order for two boys to punch. As soon as covers and paper were ready, the ribbon was run in and then passed to a clever little girl who did all the tying because she made such pretty knots. There was work for every one and each one did his part. The time was up but all had been Good Americans, for each one had done his special bit cheerfully and well. All had worked together for the good of all. There was a satisfied feeling of achievement when the period closed.

That night every child found a picture for his front page. A great variety was brought: a girl scout, a boy scout, a sailor boy, a picture of Uncle Sam, a group of children saluting the flag, a child doing errands, children at work or at play in the open air, or just a well, cheerful looking boy or girl cut from a catalog. These were individual booklets, so I avoided dictating in any way about the pictures. All I wanted was the spirit and enthusiasm that would bring results.

The pictures were carefully pasted in. Then we discussed what was best for an introduction for our booklets. We decided to print: "I want to be a good American. To be a good American I must be well. This book tells of some of the things that I can do to keep well."

We also decided to include a table of contents containing the rules illustrated in our books. Several blank pages were left for

this to be filled in as we went along. The drawing period that day was used for printing.

We chose a good health rule for each lesson and it was seldom that a child failed to have a picture ready to illustrate the rule. I always kept old magazines and catalogs on hand for those children who did not have many in their homes.

Often we had clever pictures and original schemes, so none of the booklets were alike. One boy brought in a picture of some boys fighting and another picture of boys playing football. These he pasted opposite his page of "Sleep long hours with windows well opened." Under one picture he wrote, "We stay up late nights and sleep in a warm room with windows closed." Under the other, "We go to bed early and sleep in the open air." One girl brought a picture of a child crying and another picture of a child out in the early morning sun at play.

We found we could put down several headings under each rule. For instance, under Cleanliness we had the care of face, hand, nails, teeth, hair, body, clothes, desks, room, homes, yards, streets and mind.

When we were discussing how we could have a clean mind, one child said she was thinking of an experiment we had done in our science lesson some weeks before, showing that two things could not occupy the same space at the same time. If we filled our minds with good thoughts no bad ones could get in. Another child suggested writing a verse we often said for our morning exercises:

> Kind hearts are the gardens,
> Kind thoughts are the roots,
> Kind words are the blossoms,
> Kind deeds are the fruit.

Our hygiene, drawing, science and civics seemed all to be correlated.

The Good American Booklets had the desired results. The attendance was better, general posture, personal appearance, manners, and order about the room were improved.

Some of the parents frankly admitted it had reached into the homes, for the children had been ready to wash and keep clean, to eat the proper things and to do many things cheerfully that they had rebelled against before.

Health, good cheer and cooperation prevailed.

BETTIE MARDEN,
North Junior High School,
Waltham, Mass.

HEALTH WORK IN THE LOWER GRADES

"MAN cannot live unto himself alone." Neither can any one subject be isolated and taught unto itself alone without losing in effectiveness. Of what value a lesson on punctuation if during the next period the pupil prepares a history exercise lacking in capital letters and periods? Or, similarly, of what value is the lesson in hygiene in which a child is taught that he should always wash his hands before eating and then is hurried at noon into the lunchroom without being given any opportunity to apply what he has learned?

Teachers everywhere are becoming aware of the futility of attempting to dedicate a certain number of minutes of the day to arithmetic and a like period to geography and to each of the remaining ten or twelve subjects that make up a portion of the elementary school curriculum. This is shown in their ready acceptance of an activity curriculum and their willingness to attempt a correlation of subjects, when practical, resulting in a unit of work.

There may be, and doubtless should be, a definite place on the program for so vital a subject as health training. But health instruction should not end here; rather it should merely begin. Health, including safety, is such a broad subject that it may well be correlated with almost any branch of the curriculum.

Some units of work recently completed by our lower grade children may serve as an illustration of the way health was taught.

Our Grocery Store Unit

Use of a refrigerator
- Keeping milk cool and clean.
- Keeping meat.
- Keeping vegetables and fruits.

Need for keeping all foods covered
- To avoid dust.
- To prevent handling.
- To protect from flies.

These third grade children made their own costumes in a health project known as the Redwood Highway Unit.

A "yellow and white" luncheon prepared and served by a boys' class in home economics at a Maryland high school.

Milk as a food
  Other dairy products.
Fruits
  The apple.
  The orange.
Vegetables
  Carrots.
  Spinach.
  Celery.
  Cabbage.
Buying foods in a neat, clean store

Wild Flower Friends Unit

Needs of plants
  Plenty of food of the right kind.
  Water.
  Fresh air.
  Sunshine.
Similar needs of boys and girls.
Mushrooms and toadstools.
Avoid tasting unfamiliar berries.
How to recognize poison ivy.
Remedy for poison ivy.
A plant usually grows as it is started—straight or crooked.
Value of correct posture.

Redwood Highway Unit

Need for fresh air and sunshine
  Beaches along highway.
Restaurants
  Planning healthful meals.
  Eating only clean foods.
Auto camps
  Need for sunny, dry camps.
  Keeping the camp clean.
  Drink only pure water.
Dairying along the highway
  Kinds of cattle.
  Care of cattle.
  Reason for testing.
  Value of pasteurized milk.
  Milk as a food.
Fruits and vegetables grown on highway
  Value as healthful foods.
Poultry-raising.

Health must be made real to the child. It must be a part of his daily life and he must recognize the relationship between health and his own activities. Having been presented, the health rules must be practiced over and over again in order that desirable health habits may result.

There are three types of lessons in health, as in other subjects—the presentation lesson, the drill and the application lesson; and, of the three, the application lesson, wherein the child may put into practice the knowledge he has learned, is of greatest importance.

BELLE L. DICKSON,
Humboldt State Teachers College,
Arcata, Calif.

PLAYING THE GAME OF HEALTH

A Novel Experiment in Teaching Health Through Home Economics

II

AN EARLIER article described some of the interests grouped around the Little Mothers who with their Preschool Projects play so active a part in the game of health in the high school in Pocomoke City, Md.

The boys of the senior class in the same school also play an original part in the school-wide game. For these boys, the game has been, as for the girls, a part of their school experience since the days before their entrance upon the senior year. But they have never before been students of home economics.

The boys in the photograph possess distinction. They are the first class of boys in Pocomoke High School to take the course.

It is just as essential for our high school boys as for our high school girls, during those precious molding years of adolescence, to develop an awareness of and an appreciation for some of those principles of real home-making. Will not our future citizens come from the homes whose founders are in our schools today?

A tentative outline of the course was suggested to this first class of senior boys. They voted unanimously for its incorporation into their schedule. They gave to all its interests such whole-hearted cooperation and diligent attention that working with them was inspiring, and they pleaded for its continuance when the pressure of other features in the school program made further lessons impossible.

Space does not permit us to tell of all the activities of those six delightful weeks—the time allotted to this block of work, two periods each week being given it. The boys learned some principles in the choice and preparation of foods; the relation of proper food to successful living and high achievement; the duties and privileges of a host and a guest.

Partial application of these principles was effected by the planning, preparation and serving of a series of four-course luncheons in which balance, color and flavor combinations, and attractiveness of service were emphasized. The boys worked in groups of four, one boy being entirely responsible for one course. Those boys who were to be seated took turns in acting as host and as honor guest.

Adaptability, ingenuity, courtesy, efficiency, these and other desirable qualities possessed by these amateurs in home economics were afforded additional means of expression through this novel experience. Their appreciation of its significance to them was shown by the boys in selecting the term by which to designate it. They called it the "Finer Men Unit."

This unit is part and parcel of the Game of Health. By helping these boys in their development of proper food habits through lessons in the choice, preparation and service of food and by helping them in the formation of wholesome attitudes and a clear outlook, this unit helped them develop health of body, of mind, of spirit.

ETHEL M. DIX,
Pocomoke High School,
Pocomoke City, Md.

NEW HEALTH BOOKS AND TEACHERS' MATERIALS

DR. LASHLEY in "Brain Mechanisms and Intelligence"[1] presents to the scientific world a revolutionary concept in the field of cerebral physiology, a concept that seriously affects psychologic theory. Today there is an almost universal acceptance of the theory that learning consists of modification of the resistance of specific synapses in definite conduction units of the nervous system. Thorndike's theory of the formulation of bonds (1913) is typical of present-day theories.

Dr. Lashley's experiments with rats, closely correlated with well known facts related to human anatomy and behavior, lead him to believe that contrary to present-day theories integration cannot be expressed in connections between specific neurons. The mechanisms of integration are to be sought in dynamic relations among parts of the nervous system rather than in the minute details of structural differentiation. Experiments on rats show that the interruption of association paths produces little disturbance in behavior so long as the functional areas supplied by them still have some functional connection with the rest of the nervous system.

If Dr. Lashley's results are confirmed by other investigators, it means the passing of the theory of the importance of the synapse in learning.

Those who have had training in physiology and anatomy and are interested in psychologic theories will enjoy this important volume by Dr. Lashley.

1. By K. S. Lashley. Price $3. Pp. 186. The University of Chicago Press, Chicago, 1929.

IN THIS age of application of science to education this study by Dr. Cairns[2] on the scientific basis of health education will be read by all health educators with interest. Since the more significant aims of health education should be the postponement of death and the prevention of illness and physical defects, Dr. Cairns begins her study with a survey of statistics to determine just what the health needs of society are.

Next, Dr. Cairns tries to find out by investigation just what the schools are doing in serving these ends. The investigation is disappointing. In her conclusions the author says:

"There is need for a better selection and a better organization of instructional content. Time which could be used to advantage in teaching health essentials is too often wasted on the teaching of non-essentials.

"Health instruction which fails to teach the fundamentals fails to function in health promotion. This failure is largely due to the fact that teacher-prejudices rather than scientific information determine health instruction."

The author finds that instruction is not always carried by those individuals or departments which are best fitted to do this. "The chief responsibility for health instruction should not be placed on the physical education departments." In the high school Dr. Cairns believes that physiology, biology and general science should have the major part of the responsibility for health instruction.

There are twelve general recommendations at the end of this important work, which health educators should study with care. Let us have more of these studies from graduate schools of education.

CHANGES in society involving movements of population, the universality of reading, commercialization of pleasure and the decline of community and family life have brought about modifications of our moral norms and behavior practices. Social structures and social norms have lagged behind activities and personality development. Within recent years various types of organization and program have been directed toward the study and control of behavior. Most of these have been extra-academic in origin. Problems of personal demoralization had to be attacked in a practical way before an exact science could be developed. This volume attempts to examine some of these programs and technics and to make some appraisal of them. "The Child in America"[3] should be an excellent book of reference for students of child psychology.

2. A Scientific Basis for Health Instruction in Public Schools. By Laura Cairns. University of California Press, Berkeley, Calif., 1929.

THIS publication[4] was prepared for the use of teachers in high schools who find it desirable to put in the hands of their pupils material on rest and sleep in a program of healthful living. It may be used as supplementary material in a course in hygiene or in work in social science in which the problem of fatigue as a social or personal matter is to be considered.

Miss Reynolds sums up the excellent experimental work that has been carried on into the nature of sleep in George Washington University, University of Chicago and Colgate University. She devotes little space to the fine-spun theories about sleep. Activity, a sensation of fatigue, and recovery through rest she recognizes as experiences common to all higher forms of animal life. Probably in primitive times when man's activities consisted largely in getting food and shelter the sense of weariness could probably be counted upon to regulate the amount of rest needed. Fatigue was not then a social problem. Under present-day conditions there is so much stimulation to continue work or play beyond the point of actually feeling fatigue that this danger signal becomes weakened. For this reason under conditions of civilization fatigue may become cumulative and dangerous to mental and physical health. Miss Reynolds affirms that sleep brings the most complete rest. Recommendations are made as to the amount of sleep needed by children of different ages.

This is an excellent pamphlet for teachers and it ends with the mere statement of belief, to which every reader would probably subscribe, that sleep is one of the great needs of healthful and efficient living.

THE boy is one of the most precious assets of our civilization but one that is hard to understand. Professor Boorman has contributed an interesting and practical book, "Developing Personality in Boys,"[5] which should be of help to teachers and parents. The book contains much first-hand material taken from the life histories of boys. The methods of approach in dealing with boys are clearly set forth. The reader may learn how many boys become maladjusted and also how such maladjustment may be prevented.

3. By William I. Thomas and Dorothy Swaine Thomas. Pp. 583. Knopf, New York, 1930.

4. Rest and Sleep — Why We Need Them. By Nora L. Reynolds. Pp. 16. National Tuberculosis Association, 370 Seventh Avenue, New York, March 1930.

5. By W. Ryland Boorman. Pp. 257. The Macmillan Company, New York, 1929.

Questions *and* Answers

If you have a question relating to health, write to "Questions and Answers," Hygeia, enclosing a two-cent stamp. Questions are submitted to recognized authorities in the several branches of medicine. Diagnoses in individual cases are not attempted nor is treatment prescribed.

Cold Shower

To the Editor:—I have been accustomed for a number of years to take regularly every morning a shower with tepid or cold water, for about thirty seconds. Is this injurious, and does it take the electricity out of the body?

A. S., Georgia.

Answer.—A cold bath in the morning is a practice indulged in by a vast number of persons and is a thoroughly wholesome, invigorating one. No harm can come from it, provided the reaction that occurs after the bath is prompt and complete. The statement that it takes the electricity out of the body has no basis in the present knowledge of physiology.

Benefits of Ocean Voyage

To the Editor:—Often a person who is physically and mentally run down is told to take an ocean voyage; the rejuvenating and tonic effect of such a trip is said to be beneficial; it brings back the "pep." I should like to locate some article or data that will explain why the ocean voyage is so good for one; what convincing reasons are there to recommend such a trip? Have you any bulletin or perhaps an article in a past number of your publication which treats of this subject?

F. A., California.

Answer.—A sea voyage has several features that make it healthful. In the first place the air over the ocean is free from infectious germs or irritating dust particles. In good weather one gets the full benefit of the sun by remaining out on the open deck. The freedom from business cares and worries and the various annoyances which one meets at home is another important element. An article on this subject was printed in Hygeia in February, 1927.

The Sterols

To the Editor:—What are cholesterol and ergosterol? How and where may they be obtained? In what form, to what extent, and for what purpose have they been used by the medical profession?

L. E. S., Illinois.

Answer.—These substances are just now the subject of intensive investigation and much is being learned about them. In general, the sterols are defined in one of the latest medical dictionaries as follows: "A group of solid fats derived from vegetable sources which consists chiefly of atomic, monohydric, unsaturated alcohols. One of the most important of these is cholesterol, which is defined as a monatomic alcohol found in the blood, brain tissues, nerve substances, spleen, liver and bile, and which forms the greater part of gallstones."

Ergosterol, belonging to the same group, is defined as an inert alcohol derived from ergot. It is also found abundantly, however, in yeast and many other substances. A recent discovery is the fact that when ergosterol is exposed to ultraviolet rays, either from those in the sunlight or from an ultraviolet lamp—that is, when it is irradiated—the substance becomes active and exerts when taken into the body a vitamin-like effect. It has remarkable properties in preventing rickets in rats and other animals as well as in human beings.

This whole subject has been covered fully in a recent book by Katherine Blunt and Ruth Cowan, "Ultraviolet Light and Vitamin D." It is published by the University of Chicago Press.

Irradiated ergosterol has been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for admission to the annual volume of "New and Nonofficial Remedies" under the name viosterol. It is now extensively used for the prevention of rickets in lieu of cod liver oil.

Ketogenic Diet for Epilepsy

To the Editor:—I am interested in ketogenic diet for epilepsy and, having had it recommended by a doctor, write to inquire if you could suggest some menus.

W. K. K., New Jersey.

Answer.—The ketogenic diet, which is being used for persons with epilepsy, consists largely of fat. It is not without harmful effects, and therefore cannot safely be undertaken by any one except under the immediate direction of a physician. The doctor who recommended it should carefully outline the menus, and while they are being taken the patient should report to the doctor for examination and checking up from time to time.

Excessive Fear of Germs

To the Editor:—What will cure and what is your advice concerning hypochondriasis? A man who is suffering with this disease washes his hands innumerable times a day because he imagines he has germs or microbes. He has been without work for three years.

A. N. A. Virginia.

Answer.—A fear of dirt and a disposition constantly to wash oneself, especially the hands, is a well recognized form of phobia known as mysophobia. This condition is also that of a profound disturbance of normal mental conditions which need expert study and the advice of a competent physician.

Minerals

To the Editor:—Does salt furnish the raw material to the system for the manufacture of hydrochloric acid? If one were inclined to hyperacidity would drinking buttermilk in which much salt were added to make it palatable produce too much acid in the stomach? Is mineral matter contained in a plant more easily assimilated than the mineral itself? In other words, if I eat vegetable matter which contains mineral matter, is this mineral more easily assimilated than if I were to take the mineral itself? Can the mineral content of a plant be increased by fertilizing with minerals of different kinds? Suppose I were to fertilize with calcium sulphate, would that add both lime and sulphur to the plant or if I fertilized with acid phosphate rock would that add phosphorus to the plant? Is the human or animal system a selector of what is required when it is made possible for it to do the selecting by passing foods containing minerals through it? In other words will it take out what it wants and allow the others to pass on through without being assimilated?

F. H. P., Kansas.

Answer.—Common salt, sodium chloride, as taken with food is an important source of hydrochloric acid secretion in the gastric juice. Chlorine, however, occurs in other salts that are taken into the body, and one cannot say that common salt is the only source. As to the bad effects of taking too much salt, there is much difference of opinion. For the normal, healthy individual there is little likelihood of one's

taking too much. In certain diseases, however, it is believed by some authorities that the restriction of the salt intake is a dietetic measure of value.

Some physicians believe that iron taken in combination as found in plants or in animal foods is more readily assimilated than when taken in mineral form. On the other hand, one of the standard methods of administering iron is in the form of tincture of chloride, or tincture of iron or in Blaud's pills of carbonate of iron. That the mineral content of a plant can be increased is one of the fundamental facts of plant chemistry. Acid phosphate rock, used in such enormous quantities for the purpose of fertilizing, is of value because of the phosphorus it contributes to the plant grown in the soil so fertilized.

The normal human body does exactly what is suggested in the last paragraph of this letter. It selects from the foods which are taken into the body the chemical materials which are necessary, and, as a rule, in just the proper amount. One of the remarkable things about the physiology of the body is the exquisite selectivity manifested by the cells and tissues.

Raw Food Diet

To the Editor:—Would you please tell me your opinion of the raw food diet?

P. C. W., California.

Answer.—If by this inquiry is meant living on uncooked food exclusively, the best opinion is that this is a dietetic fad that is not to be recommended. The principal advantage of raw foods is that certain of them, especially the vegetables, contain the vitamins, but these vitamins can be had in ample amount if a portion of the diet each day is obtained from fruit, fresh vegetables (uncooked), milk and its products, eggs and other articles.

A certain amount of cooking, done in the right way, does not entirely destroy the vitamins in many of the articles of food; for example, it has been abundantly demonstrated that canned tomatoes contain a good supply of vitamin C and the pasteurization of milk destroys only a part of the vitamin content.

Nicotine in Cigarets

To the Editor:—After reading in the December issue of your magazine the article, "Makes Chemical Analysis of Cigarets," the question occurs to me, how can the nicotine of a cigaret be increased by strong continuous suction?

J. K. Pennsylvania.

Answer.—The material in HYGEIA was taken from the issue of *The Journal* of the American Medical Association for October, 1929, in which was printed an interesting article by Dr. Emil Bogen of Cincinnati, entitled "The Composition of Cigarets and Cigaret Smoke." Among other things Bogen states: "The nicotine content of the main stream of smoke increases also with the speed of smoking, so that with rapid suction nearly half the nicotine in the tobacco may be carried over. The aldehydes show a similar but somewhat less rapid change. When one smokes with small intermittent puffs so that the cigaret does not burn down in less than ten minutes to the two thirds mark, the amount of carbon monoxide, nicotine and aldehyde contained in the smoke forms but a small fraction of that obtainable by the fast and furious smoking. In addition, of course, the slower smoker consumes a lesser total number of cigarets in a day."

Again Doctor Bogen writes: "The stump, or the amount of cigaret left unburned, is another factor of considerable importance. The amount of nicotine and other materials removed from smoke by passing through the tobacco of the unburned part of the cigaret varies with the amount of smoke so passing and its concentration, as well as with the dryness of the smoke, the rate of suction, the temperature of the smoke and of the tobacco, the length of the stump, fineness of the particles of tobacco and the firmness of the packing and so forth."

Calories

To the Editor:—How many calories does a man 6 feet tall and leading a sedentary life need? Or a woman 5 feet 4 inches tall, who sews half the day and keeps house the rest of the day? What is the caloric value of butter, honey and cane sugar? If one gets protein from a pint of milk, eggs and cheese, and plenty of iron from vegetables, can meat be safely omitted and with what benefit? R. E., Wisconsin.

Answer.—The amount of calories that one should have is dependent on the weight more than on the height at any given age. A good book on the subject of the normal diet with special reference to the caloric requirement of the body is one by W. D. Sansum, entitled "The Normal Diet," published by C. V. Mosby Company of St. Louis, Mo.

The caloric value of butter varies somewhat with the amount of water it contains, but averages about 800 calories for each 100 grams of butter. Honey supplies about 335 calories and cane sugar 410 calories per 100 grams. It is entirely possible for one to keep in good health without the use of meat, although most people find advantages in a mixed diet containing vegetables, fruit, milk, eggs and a moderate amount of meat.

Purpura

To the Editor:—What disease would cause bruise places to come on my legs and arms? The bruise spots started more than a year ago, when I started taking sulphur and cream of tartar tablets for constipation and to purify my blood. When one spot goes away another comes within a few days. They are first purple or deep blue; next day they change their color to pinkish and the following day copper color, and next day they disappear. I feel nervous all the time. A year ago also the gums around two teeth turned blue. The discoloration went away in a day or two and has never returned but occasionally my gums get irritated. Do you think if I continue taking these tablets for a year or two longer they would purify my blood and these spots would stop? I had my blood tested this summer and no germs were found. I am 42 years old.

F. M., Florida.

Answer.—The appearance of bruise places on the body in the absence of an injury suggests what is known as purpura, in which blood oozes from the vessels under the skin and then undergoes changes in color, becoming what are commonly called black and blue spots.

Purpura is often a symptom of some general condition. The right thing to do is to consult a physician in regard to the trouble. This purpura with spongy, bleeding gums constitutes one of the principal signs of scurvy or scorbutus, a disease due to defective diet. The tablets of sulphur and cream of tartar would probably be of little value in this condition.

Bright's Disease

To the Editor:—What are the symptoms of Bright's disease?

L. D., Virginia.

Answer.—It is not possible to describe the symptoms of Bright's disease because Bright's disease is such an indefinite term. Of it a recent edition of a standard medical dictionary says: A term of very indefinite limitations, meaning, in general, acute or chronic nephritis; by some it is restricted to chronic nephritis; by others it is employed to denote the more serious form of nephritis neither acute nor chronic; then by others it is used as synonymous with diseases of the kidneys, including amyloid degenerate and granular kidneys."

A complete discussion of all of these varieties of nephritis may be found in recent medical textbooks.